به نام خداوند جان و خرده
مقالات و خلاصه مقالات مرکز قلب تهران
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سال ۱۳۸۷

Tehran Heart Center
Published Articles
2008 - 2009
Association of estrogen receptor α gene polymorphism with the presence of coronary artery disease documented by coronary angiography

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Abstract

Objectives: To examine the relationship between PvuII and XbaI polymorphisms, with the presence of angiographically determined CAD in an Iranian population.

Design and methods: Patients having angiographic evidence of atherosclerosis (Gensini score ≥ 6) in their epicardial coronary tree (CAD+ case group) were compared with Patients with Gensini score ≤ 6 (CAD− control group). The presence of PvuII and XbaI polymorphisms was analyzed using polymerase chain reaction-based restriction fragment length polymorphism (PCR-RFLP).

Results: The PvuII genotype distributions were not statistically different in CAD groups, and subgroups stratified by gender. For the XbaI polymorphism, after controlling for age, male sex, cigarette smoking and hyperlipidemia, XbaI GG genotype was also not found to be an independent predictor for CAD occurrence (OR=1.65; 95% CI: 0.90–3.03; P=0.10).

Conclusions: We did not observe an association between ESR1 PvuII and XbaI gene polymorphisms with CAD in the risk of CAD in an Iranian population.

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Keywords: Estrogen receptor; Coronary artery disease; Iranian population

Introduction

The physiological effects of estrogen are principally exerted through two distinct estrogen receptors, estrogen receptor α (ESR1) and estrogen receptor β (ESR2), both of which are members of the superfamily of steroid hormone receptors [1,2]. ESR1 and ESR2 are encoded by two separate genes which both expressed in endothelial cells and vascular smooth muscle cells [3,4]. Animal and human studies have revealed that ESR1 is the main mediator of the atheroprotective effect of estrogen [5,6]. It has also been shown that there is an association between diminished expressions of ESR1 with the occurrence of premature atherosclerosis in premenopausal women [7]. Therefore, changes in ESR1 expression and function may fade the atheroprotective role of estrogens.

A variety of polymorphisms of the ESR1 gene – both single nucleotide polymorphisms (SNPs) and tandem repeats – has been investigated in candidate gene association studies, and associations between a number of polymorphisms in ESR1 with several pathological conditions, including cardiovascular disorders [8–13], and venous thromboembolism [14,15] were observed. Of the polymorphisms identified in the ESR1 gene,
A case of septic arthritis of the sternoclavicular joint after coronary angiography.

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Septic arthritis of the sternoclavicular joint (SCJ) is a rare condition speculated to be associated with some predisposing factors such as intravenous drug use, immunocompromised situations or chronic diseases. To the best of our knowledge, we are the first group reporting a case of SCJ septic arthritis after coronary angiography.

PMID: 19078918 [PubMed - in process]
Aortic and Mitral Valve Atherosclerosis: Predictive Factors and Associations with Coronary Atherosclerosis Using Gensini Score

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Background and Aims. Valvular atherosclerosis is defined as extra- and intracellular lipid deposition, thickening of the fibrosa layer, decreased thickness of the spongiosa, and chronic inflammation. We sought to identify the predictive factors for valvular atherosclerosis and assess the possible associations between valvular atherosclerosis and coronary atherosclerosis using the Gensini score.

Methods. Between January 2004 and May 2008, 1400 adult patients underwent mitral or aortic valvular surgery with or without coronary artery bypass grafting (CABG) at our center. From the total study population, 68 (4.85%) patients had atherosclerotic valves during histopathological evaluations. Risk factors for valvular atherosclerosis were identified via a comparison between the 68 cases and 115 controls who had valvular surgery without valvular atherosclerotic changes.

Results. Distributions of atherosclerotic changes in the cardiac valves were as follows: 35 (51.5%) patients with aortic atherosclerosis, 27 (39.7%) with mitral atherosclerosis, and 6 (8.8%) with both mitral and aortic valve atherosclerosis. Our univariate analysis revealed that age, gender, diabetes, body mass index (BMI), hyperlipidemia, smoking habit, and aortic stenosis were significant. According to our multivariate analysis, BMI, smoking habit, diabetes, and aortic stenosis were the risk factors for valvular atherosclerosis. Also, stages of coronary artery atherosclerosis using Gensini score were significantly higher in patients with valvular atherosclerosis.

Conclusions. Valvular atherosclerotic changes are strongly analogous with coronary atherosclerosis and generalized atherosclerotic processes. Our results also showed that BMI, smoking habit, diabetes, and aortic stenosis were risk factors for valvular atherosclerosis. © 2009 IMSS. Published by Elsevier Inc.

Key Words: Coronary atherosclerosis, Valvular atherosclerosis, Gensini score.

Introduction

Atherosclerosis is a process of chronic inflammation initiated in response to injury of the vascular wall. It can be conceptually divided into molecular and cellular biological events, comprising extracellular lipid accumulation, leukocyte recruitment, foam cell formation, intimal growth secondary to smooth muscle cell migration and proliferation and extracellular matrix deposition, vessel remodeling, plaque angiogenesis and, finally, plaque disruption and thrombosis caused by rupture of the fibrous cap or endothelial erosion (1). Several studies have demonstrated associations between coronary atherosclerosis and valvular sclerosis and calcification like mitral valve calcification, aortic valve calcification, and aortic valve sclerosis by echocardiography. It has been demonstrated that they have
Atherosclerosis and Vascular Injury: The Effect of a Perivascular Nitric Oxide Donor in a Cholesterol-Fed Rabbit Model

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Nitric oxide (NO) has been shown to prevent neointimal hyperplasia and decrease atherosclerosis in several animal models. It is a major modulator of vascular homeostasis and has vasoprotective effects against atherosclerosis. However, NO-based therapies with such purposes have not been used in the clinical arena. Our objective was to combine a medical grade elastomer and an NO donor, diethylenetriamine NO adduct (DETA/NO), to determine whether its perivascular administration can attenuate atherosclerosis and vascular injury. Aortic intimal injury was produced using paediatric pulmonary valvoplasty catheter in 22 healthy male New Zealand White rabbits, which were fed a high-cholesterol diet for 4 weeks beforehand. A mixture of the elastomer Silastic and DETA/NO was applied locally to cover the aortas in the experiment group. After 6 additional weeks on the high-cholesterol diet, the aortas and blood samples were harvested for pathologic analysis and comparison with the control group. Mean atherosclerosis and vascular injury surface area was $6.68 \times 10^5 \text{mm}^2$ in the experiment group, compared with $3.44 \times 10^5 \text{mm}^2$ in the controls. However, there was no statistically significant difference in atherosclerotic surface area between the two groups. Perivascular application of the NO donor DETA/NO, in the concentration we used, did not prevent atherosclerosis in high cholesterol–fed rabbits. This finding prompts more careful assessment before possible clinical uses.

INTRODUCTION

Atherosclerosis is a common problem that imposes great morbidity and mortality on the community. It is the main cause of occlusive vascular diseases such as coronary artery disease.1 Treatments for atherosclerosis-induced vasculopathies include procedures such as percutaneous interventions and surgery when medical therapy does not lead to adequate response.2,3 However, both interventions are associated with frequent occurrence of restenosis, which is mostly due to intimal hyperplasia and recurrence of atherosclerosis.4,5 For instance, saphenous vein, the most usual graft used in coronary artery bypass grafting, has been reported to occlude in 15% to 20% of cases during the first postoperative year, half of which occurs within the first 2 weeks, and this is attributed to the low production of endothelium-derived nitric oxide (NO) in the grafts.6,7

NO has been shown to be a major modulator of vascular homeostasis and to have a vasoprotective effect against atherosclerosis.8 It inhibits platelet aggregation, leukocyte migration, and adhesion to endothelium, and it also attenuates vascular muscle cell proliferation and migration, which collectively promote atherosclerosis and restenosis.9-12

The intent of our study was to evaluate the effects of diethylenetriamine NO adduct (DETA/NO), an
Cardiac and Great Vessel Involvement in “Behcet’s Disease”

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ABSTRACT Behcet’s disease is a multisystem disorder and classified as “vasculitic syndrome with a wide variety of clinical manifestations.” Cardiac involvement is very rare but can occur with different presentations including: pericarditis, cardiomyopathy, endocarditis, endomyocardial fibrosis, intracavitary thrombosis, and coronary artery disease. Great vessel involvement is more common. Recurrent Phlebitis, commonly involving large vessels (superior vena cava, inferior vena cava, hepatic veins) and cerebral veins are the sole presentation in this regard. Arterial involvement is expressed by aneurysm or pseudoaneurysmal formation. Due to the wide variety of cardiovascular manifestations and the resulting high mortality, cardiac surgeons should be familiar with this disease. In this paper we review the articles and introduce our four cases presenting with aneurysm of ascending aorta with free aortic insufficiency, aneurysm of descending aorta, pulmonary artery aneurysm, and pseudoaneurysm of aortic arch.


Behcet’s disease (BD) was first discovered in 1937 by Hulusi Behcet. It is an autoimmune disease and is classified as a vasculitic syndrome. This disease is a multisystem disorder with a wide variety of clinical manifestations including skin, eye, musculoskeletal, neurologic, and cardiovascular presentations.1,2 The spectrum of cardiac diseases may include pericarditis, cardiomyopathy, endocarditis, endomyocardial fibrosis, intracavitary thrombosis, and coronary artery disease. Great vessel involvement is more common. Recurrent Phlebitis, commonly involving large vessels (superior vena cava, inferior vena cava, hepatic veins) and cerebral veins are the sole presentation in this regard. Arterial involvement is expressed by aneurysm or pseudoaneurysmal formation. Due to the wide variety of pathologies, disease presentation may vary in each case.

CASE REPORT

Case 1

A 24-year-old man, a known case of BD, under follow-up by the rheumatology clinic in our center, developed exertional chest pain a few weeks prior to presentation to our ward. His workup, including chest x-ray (CXR), computed tomography (CT) scan, transthoracic echocardiography, and aortography, showed cardiomegaly, severe aortic insufficiency, and a huge aneurysm of ascending aorta as is shown in (Fig. 1). The patient had a smooth postoperative course and was discharged without any complications.

Case 2

A 50-year-old woman, a known case of BD with cutaneous and ocular manifestation on prednisolone and colchicine, presented to our center with a history of upper abdominal pain, mild dysphagia, and weight loss for a few weeks. Her workup, including CXR, echocardiography, CT scan, and aortogram, showed a saccular aneurysm of descending aorta, just above the diaphragm (Fig. 2). The patient was operated on: lateral thoracotomy was done; proximal and distal aorta was controlled and clamped. When the sac of pseudoaneurysm was opened, it was full of clot; therefore endoaneurysmorrhaphy was done using a piece of a Dacron patch. The patient had a smooth postoperative course and was discharged without any complications.

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S
tent implantation has significantly reduced the short- and long-term complications in patients undergoing percutaneous coronary intervention (PCI) compared with angioplasty alone. However, in-stent restenosis remains a major limitation of coronary artery stenting, especially in high-risk groups, including those with diabetes mellitus, small vessel size, and longer lesions. Newer randomized controlled trials have shown that drug-eluting stents (DES) have resulted in a substantial decrease in restenosis across a wide range of coronary lesions and patient subsets. However, there is growing evidence that late thrombosis, as a complication of drug-eluting stents, may obscure their brilliant characteristics. Since there is a paucity of real-world experience of clinical restenosis in patients treated with PCI including DES implantation in the developing countries and the Middle East region,
Comparison Between Dobutamine Stress Echocardiography and Myocardial Perfusion Scan to Detect Viable Myocardium in Patients with Coronary Artery Disease and Low Ejection Fraction

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Introduction: Dobutamine stress echocardiography (DSE) and myocardial perfusion scan (MPS) are commonly used to detect viable myocardium. We designed this study to compare the results of these two methods in detecting myocardial viability.

Methods: We studied 736 segments from 46 patients (42 men, mean age 56 years), with coronary artery disease and impaired left ventricular systolic function (ejection fraction <40%), using low-dose DSE and 99mTc-sestamibi MPS. The two methods were compared in the detection of viability, primarily in dysfunctional and secondarily, in different anatomical segments.

Results: Of the 736 segments, 397 (53.9%) were normal or mildly hypokinetic and 339 (46.1%) dysfunctional. Of 49 severely hypokinetic segments, 33 (67.4%) were viable and 1 (2%) nonviable according to both methods, while discordant results were found in 15 (30.6%). Among 274 akinetic segments, both methods were concordant in 148 (54%) nonviable and 15 (5.5%) viable regions, while 111 (40.5%) segments showed discordance. Of 16 aneurysmal segments, 7 were viable according to MPS, but none showed contractile reserve on DSE. The two methods were concordant in 14.2% viable, 46.6% nonviable and discordant in 39.2% of all dysfunctional segments. Eighty-seven percent (98/113) of akinetic and 20% (8/41) of hypokinetic segments had 99mTc-sestamibi uptake, but did not show contractile reserve. There was more than 75% agreement in lateral basal, anterior apical and inferior apical segments.

Conclusion: The proportion of segments showing a positive response to dobutamine is significantly lower than those with technetium uptake. This suggests that the cellular mechanisms responsible for a positive inotropic response to adrenergic stimulation required a higher degree of myocyte functional integrity than those responsible for 99mTc-sestamibi uptake.

Low dose dobutamine stress echocardiography (DSE) and the myocardial perfusion scan (MPS) have been used to identify viable dysfunctional myocardium in patients with coronary artery disease and a low ejection fraction.1-5 Both techniques can detect coronary artery disease and provide prognostic information,1-5 thus guiding patient management decisions.6,7

Schinkel et al reviewed 17 direct comparative studies with different settings that used stress echocardiography and perfusion imaging in the same patients.8 The
Complex carotid stenting using a coronary technique.

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PURPOSE: To report the utility of a coronary technique to facilitate carotid stenting in patients with difficult arch anatomies. TECHNIQUE: When confronted with challenging arch anatomy that prevents engaging the common carotid artery (CCA) with the guiding sheath using standard techniques, an 8-F left Amplatz guiding catheter (AL1) is placed at the origin of the innominate artery. A 0.014-inch coronary guidewire is advanced into the external carotid artery (ECA), and a small monorail coronary balloon is inflated in a small branch of the ECA. The balloon/guidewire combination facilitates maneuvering a 0.035-inch Amplatz super-stiff guidewire through the ECA and then advancing the guiding catheter into the CCA. CONCLUSION: This anchoring technique can be a helpful method for cannulating the CCA in patients with a complex arch when the ECA is patent.

PMD: 18729554 [PubMed - indexed for MEDLINE]
Concomitant carotid endarterectomy and coronary artery bypass grafting versus staged carotid stenting followed by coronary artery bypass grafting.


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AIM: Significant carotid stenosis (>or=70%) in patients undergoing coronary artery bypass grafting (CABG) can increase the risk of perioperative cerebral vascular accident (CVA). In this study, we compared the results of two common operative strategies: concomitant carotid endarterectomy and CABG versus carotid stenting and CABG. METHODS: This cohort study was conducted from January 2001 to September 2006. Significant carotid artery stenosis was detected in patients who were candidates for CABG at the Tehran Heart Center. The stenosis was detected by carotid Doppler screening and was confirmed by magnetic resonance angiography. Reluctant patients or those with previous major CVA, significant bilateral carotid stenosis and intracranial lesions were excluded. Patients were divided into 2 groups. Group A underwent concomitant carotid endarterectomy and CABG (n=19), while carotid stenting and CABG were done in group B (n=28). RESULTS: The mean age in group A was 67.37+-7.09 years and 65.57+-8.13 years in group B. The mean hospital stay (days) was 18.68+-7.95 in group A and 26.35+-77.04 in group B (P=0.01). The median charge was dollars 252.79 in group A and dollars 2206.66 in group B (P <0.0001). There was a significant difference in frequency of hypotension and bradycardia between the 2 groups (P <0.05). There were 2 cases of in-hospital mortality in each group (10.5% and 7.1%, respectively). Two postoperative strokes occurred in group A and 3 in group B (10.5% and 10.7%, respectively). CONCLUSION: Concomitant carotid endarterectomy and CABG is as safe as carotid stenting and CABG, with fewer neurologic events and less hypotension, bradycardia, cost and shorter hospital stay.

PMD: 18431351 [PubMed - indexed for MEDLINE]
Correlation between lipoprotein(a) serum concentration and severity of coronary artery stenosis in an Iranian population according to Gensini score

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Abstract

Objectives: To investigate the correlation between serum lipoprotein(a) concentration and existence as well as severity of coronary atherosclerosis.

Design and methods: A cross-sectional study was conducted on 826 patients who underwent angiography through measuring blood sugar, serum lipids, lipoprotein(a) and evaluation of coronary stenosis by Gensini score.

Results: Gensini score = 6 was considered as a cut-off point for coronary disease and 40 mg/dL was determined as lipoprotein(a) cut-off point. Its higher concentration was significantly more frequent in patients with Gensini score > 6 (OR: 2.50, p = 0.001), independent of gender, smoking, diabetes mellitus and hyperlipidemia. This finding was significant in patients < 55 years old. There was a significant relationship between severity of coronary stenosis and higher concentration of serum lipoprotein(a).

Conclusion: LP(a) serum concentration is an independent risk factor for coronary atherosclerosis in the Iranian population especially at the ages below 55. Also it demonstrates a direct relationship between severity of coronary atherosclerosis (by Gensini score) and serum LP(a).

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Keywords: Lipoprotein(a); Coronary atherosclerosis; Coronary stenosis; Severity

Introduction

Atherosclerosis is the leading cause of death all around the world [1–3] and cholesterol content of low-density lipoproteins is a major independent risk factor for vascular atherosclerosis [4]. "Lipoprotein(a)" [LP(a)] is a genetically-determined low-density lipoprotein with a unique "Apo(a)" molecule that changes inconsistently and minimally in response to environmental, physical or life style modifications and it predisposes persons to thrombotic complications of atherosclerosis [4–8]. There is a controversy about correlation of LP(a) serum concentration with coronary atherosclerosis in different populations. While many studies proposed atherogenic mechanism(s) for LP (a) [5–8] and emphasize on the atherogeneity of LP(a) [6–16], several studies failed to demonstrate this association, including Ridker and colleagues [17] who found no evidence of association between LP(a) level and future myocardial infarction, and Gurewich and Mittelman [18] who disagreed with the existence of such relationship. Moreover there is no definite study about this issue in Iran with such great sample size and using ELISA as the analytical method; while a preceding study by Rahmani et al. recruited 251 participants and LP(a) concentration was measured by immunoturbidimetric assay [19]. Considering the socioeconomic importance of the prevalence of atherosclerotic lesions and the above-mentioned controversy we tried to determine whether there is any correlation between LP (a) mean serum concentration and coronary artery atherosclerosis and its severity.

Methods and materials

Study patients

This cross-sectional study was conducted in “Tehran Heart Center”, (a referral hospital affiliated to Tehran University of Medical Sciences) from July 2004 to July 2005. After obtaining
Cytotoxicity of $^{111}$In-oxine on mesenchymal stem cells: a time-dependent adverse effect

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**Background** Radioactive labeling with $^{111}$indium ($^{111}$In) tracers has been among the most widely used methods for tracking stem cells. As the first experiment on human stem cells, we designed a study to continuously follow the influence of $^{111}$In labeling on stem cell viability during the 2-week period of postlabeling.

**Methods** After culturing mesenchymal stem cells (MSCs), we divided the cells into six samples, each of which contained $1 \times 10^6$ MSCs. The first sample was considered as the control. The remaining five samples (samples 2–6) were labeled with the following doses of $^{111}$In-oxine, respectively: 0.76, 1.64, 3.48, 5.33, and 7.16 MBq/$10^6$ MSCs. To evaluate the effects of $^{111}$In-oxine labeling on cellular viability and count, all samples were examined immediately after labeling (2 h) as well as 24, 48 h, and 5, 7, and 14 days postlabeling.

**Results** No statistically significant relationship was found between labeling efficiency and administered dose. Associations between the specific activity and radiotracer dosage was significant ($P=0.001$, $r=0.9$). In addition, a negative correlation was noted between radiotracer dosage and viability during the 2-week period of follow-up.

**Conclusion** Cytotoxic effects of $^{111}$In on human stem cells is a time-dependent phenomenon and hence, assessment of the stem cell viability immediately after labeling (which is frequently made in clinical trials) is unable to detect adverse effects of this radiopharmaceutical on the integrity of stem cells. Even low doses of $^{111}$In-oxine are accompanied by significant cell loss in a 2-week period. Although it has been confirmed that nuclear medicine techniques are the most sensitive methods for stem cell tracking, we recommend that the application of this tracking technique should be treated with great reserve, and if necessary, as little of $^{111}$In-oxine as possible should be added to the cells (or only a limited portion of the cells should be labeled) to minimize cell death.
DEVELOPMENT OF AN OVINE MODEL OF MYOCARDIAL INFARCTION

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Background: We report experimental myocardial infarction by occluding coronary arteries in ovine models.

Methods: Twelve ewes were included in the study. After the chest was opened by left lateral thoracotomy incision, the second diagonal branch of the left anterior descending coronary artery was ligated at a point approximately 40% distant from its base. Prophylactic anti-arrhythmics were given. Animals were mechanically ventilated during surgery and stayed in intensive care unit for 24 h postoperation. Experiments were then evaluated by echocardiographic, electrocardiographic, haemodynamic, serological and morphological investigations. Echocardiographic measurements were repeated after 2 months and animals were then killed for post-mortem cardiac examinations.

Results: All animals survived the surgical procedure. Cyanotic discoloration and hypokinesia in the cardiac tissue in an area of (30 ± 2) × (4 ± 2) mm plus ST-segment elevations was detected immediately after vessel ligation. Moreover, there were pathological Q-waves 2 months later. Echocardiographic evaluations showed an average of 30% relative decrease in cardiac ejection fraction. Wall motion analysis showed anteroseptal hypokinesia and akinesia in all animals 1 day and 2 months after operation, respectively. Thin-walled infarcted areas with tissue fibrosis were evident in pathological investigations 2 months after surgery.

Conclusion: In conclusion, we developed a practical and safe method for producing myocardial infarction in large animal models.

Key words: animal model, diagonal branch, left anterior descending coronary artery, myocardial infarction, sheep.

INTRODUCTION

Today, acute myocardial infarction (MI) is the foremost cause of mortality in many countries around the world. Despite the drawbacks in the use of large animal models for cardiovascular research, the most important being their need for substantial housing resources and care, they have recently become an issue of interest. The interest stems from their anatomical and physiological similarity to humans.1–7 Coronary artery ligation to induce MI in these models is now considered a widely used and attractive method for experimental research because of its clinical relevance.7–12 However, there are only few published studies describing the procedure in detail. Here, we report a detailed guide for induction of MI in ovine models by ligating the main diagonal branch of the left anterior descending (LAD) coronary artery (namely, homonymous artery in sheep) with echocardiographic, electrocardiographic, haemodynamic, serological and morphological evaluations.

METHODS

Animal care and selection

The study was approved by the ethical committee of Tehran University of Medical Sciences. All experiments received humane care in accordance with the ‘Guide for the Care and Use of Laboratory Animals’ published by the US National Institute of Health (NIH publication no. 85-23, revised 1996). Twelve Iranian ewes weighing 50 ± 10 kg were used. During the study, the animals were held for 1 week in the animal house so they would be adapted to the environment. They were examined by a veterinarian and a cardiologist, both clinically and echocardiographically, and some were excluded from the study if any serious morbidity was detected.

Surgical preparation

The sheep were NPO (nil per os) 24 h before surgery. Animals were sedated using intramuscular xylazine, 0.2 mg/kg, for hair shaving and instrumentation. Body hair was shortened and then shaved in the chest area. The saphenous vein was cannulated with a #20 gauge (pink) intravenous catheter. A central venous cannula was placed in the jugular vein using Seldinger technique. Intravenous infusion of lactated Ringer’s solution (20 cc/kg in 1 h) was delivered before anaesthesia, which was maintained at a rate of 10 cc/kg per h. The urethra was catheterized by a #10 Foley catheter connected to a urine bag. A pulse oximeter transducer was connected to the ear to monitor O2 saturation. Five electrocardiogram (ECG) electrodes were connected to the extremities and on the chest. Anaesthesia was induced by intravenous injection of sodium thiopental, 5 mg/kg and maintained by halothane (2.0–3.0 vol. %) in oxygen. Animals were then immediately intubated.
Early Outcomes of Double-Vessel Coronary Endarterectomy in Comparison with Single-Vessel Coronary Endarterectomy

Our goal was to investigate the safety of single- and double-vessel coronary endarterectomy as an adjunct to coronary artery bypass grafting in patients with diffuse coronary disease. In reviewing the records of 9,443 patients who underwent isolated coronary artery revascularization over a 4-year period, we found 310 patients (3.28%) who underwent concomitant coronary artery endarterectomy, 39 of whom (12.6%) required double endarterectomy (Group 2) and the rest of whom required single endarterectomy (Group 1). Variables of these groups were compared by means of univariate analysis.

In Group 1, 76.3% were men, with a mean age of 58.73 ± 9.36 yr. Regarding postoperative myocardial infarction as evaluated by electrocardiography and the MB isoenzyme of creatine kinase, 13% of the patients in Group 1 and 15.4% in Group 2 were so affected. The early mortality rate was 3.3% in Group 1 and 10.3% in Group 2 (P <0.05). In univariate analysis, the following variables were significant: 3-vessel disease, postoperative atrial fibrillation, dialysis, length of hospital stay, and death. In multivariate analysis of endarterectomized arteries, the vascular combinations most strongly associated with death were left anterior descending coronary artery + right coronary artery and right coronary artery + diagonal. There was no association between endarterectomy of particular vessels and perioperative myocardial infarction.

Although coronary endarterectomy has become a safe procedure, adding a 2nd endarterectomy worsens the prognosis dramatically, and surgeons should be especially cautious about such an addition if the 1st endarterectomy is in left anterior descending coronary artery or right coronary artery territory. (Tex Heart Inst J 2008;35(2):119-24)

In recent years, with increasing frequency, cardiac surgeons have been referring patients with diffuse coronary artery disease to be considered for coronary artery bypass grafting (CABG). Approximately 45 years ago, before CABG became the standard operative treatment for myocardial ischemia, coronary endarterectomy was introduced for treating severe and diffuse coronary artery disease. Coronary endarterectomy was shown to relieve angina symptoms, but early investigators reported high postoperative morbidity and mortality rates, and ultimately coronary endarterectomy found its role as an adjunct to CABG, for use mainly in patients with diffuse coronary disease, to afford more complete revascularization. Today, many surgeons are still reluctant to use coronary endarterectomy because of increased mortality and postoperative myocardial infarction (MI) rates in comparison with CABG alone. This procedure remains technically challenging, although more recently, several authors have reported better short-term outcomes and improved long-term survival. Herein, we report our experience with this procedure, in an effort to examine its efficacy and early outcomes in 2 groups of patients who underwent single and double coronary endarterectomy.

Patients and Methods

Data Source
This is a retrospective cross-sectional study of 9,443 patients who underwent isolated coronary artery revascularization in our hospital over a 4-year period (from January 2002 through March 2006).
Effect of different sessions of cardiac rehabilitation on exercise capacity in patients with percutaneous transluminal coronary angioplasty

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Aim. Exercise capacity after training has been reported to improve after cardiac rehabilitation (CR) in patients with coronary artery disease (CAD). The purpose of this study was to evaluate the effect of different sessions of an exercise-based CR program on exercise capacity in CAD patients after elective percutaneous transluminal coronary angioplasty (PTCA).

Methods. In a university hospital, 440 patients who were enrolled in an exercise-based CR program (phase 2) after elective PTCA were retrospectively evaluated. Two hundred eighty-six subjects were categorized based on the completion of CR sessions (group A, B and C completing 5, 10 and 24 sessions, respectively). The main outcome measures were exercise training energy expenditure (ETEE) and treadmill velocity of first and last session of CR. Pearson’s χ² test, Kruskall-Wallis test, paired Student’s t test and multivariate analysis were used.

Results. All patients showed significant improvements in ETEE and treadmill velocity from baseline to follow-up sessions. A significant group effect on exercise parameters was detected between all the three CR groups (P<0.0001). On follow-up, the ETEE and treadmill velocity had statistically significant correlation with the number of completed sessions, age and gender (P<0.001).

Conclusion. The present study indicated that improvement in exercise capacity occurs in both gender from baseline to the last session, regardless of clinical characteristics of patients with PTCA. When controlled for other factors, calorie expenditure and treadmill velocity was independently associated with the number of completed sessions, age and gender.

Key Words: Exercise - Rehabilitation - Coronary artery disease - Angioplasty, transluminal, percutaneous coronary.

Cardiovascular disease remains the leading cause of death and disability in the industrial countries. In Iran, coronary artery diseases (CAD) are responsible for the highest cardiovascular related mortality rate.1,2 Cardiac rehabilitation (CR), which includes exercise training, education, counseling, and behavioral interventions, is effective in the management of patients with known coronary heart disease. Meta-analysis of pooled data from clinical trials and cohort studies has demonstrated significant reductions in all-cause and cardiovascular mortality for patients who are enrolled in exercise-based CR programs.3-5 CR programs as secondary prevention services are clinically recommended for all patients with CAD.6 However, the extent to which secondary prevention services are effective depends on the patient’s willingness and/or ability to adhere to the
Effect of Strengthening Exercises on Serum C-Reactive Protein after Coronary Artery Bypass Grafts

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Abstract

Background: Strengthening exercises are not favored in the rehabilitation of patients after coronary artery bypass grafts (CABG) for concerns over potential adverse effects. However, patients often present with weakened skeletal muscles post CABG due to disuse.

Methods: We studied the effects of aerobic and strengthening exercises on the serum C-reactive protein (CRP) levels and blood pressure in 79 post CABG patients aged 40-60 years. Patients were randomly assigned to one of four programs five days per week, consisting of either aerobic exercises alone (controls) or combined with strengthening exercises (experiments) at moderate intensity. The serum CRP levels were quantified at the beginning, 12th and 24th sessions, and at 3-month follow-up. Patients' blood pressure was measured before and after each exercise session. Patients were re-evaluated at 3-month follow-up.

Results: There was a mild but significant increase in the CRP levels at 12th session in all groups. Patients' systolic blood pressures declined by 2%-7% at 12th and 24th sessions, respectively. There was no significant difference in changes of blood pressure among the groups.

Conclusion: The results suggest that the four exercise programs were equally safe in low-risk, post CABG patients. Exercises did not promote a systemic inflammatory response. These beneficial effects were still evident at 3-month follow-up.

Keywords: C-reactive protein, Aerobic & strengthening exercises, Coronary artery bypass

Introduction

It is now widely accepted that atherosclerosis is an inflammatory disease and the pathogenesis is more complex than the accumulation of lipids in the arterial walls (1-5). Recent clinical evidence demonstrates that CRP is the strongest predictor of impending myocardial infarction and stroke (6, 7). The relationship between cardioprotective interventions and the serum CRP levels has been examined by several studies (1-4). In addition, certain biological events such as changes in endothelial nitric oxide release, regulation of adhesion molecules and proliferation of vascular smooth muscle cells are believed to be associated with variations in the serum CRP levels (4). In addition to treatment with statins, studies have suggested exercise as another clinical modality for lowering CRP levels and blood pressure in cardiac patients rehabilitating from coronary artery bypass grafts (CABG) procedures (8). It has been suggested that the anti-inflammatory effect of aerobic exercise plays a role in lowering the CRP levels (9). In addition, low to moderate intensity strengthening exercises may be safely included in the cardiac rehabilitation programs, since cardiac patients benefit from improved muscle strength for activities of daily living. While strengthening exercise improves skeletal muscle strength in low-risk male MI patients, the risk of angina, arrhythmia and increased blood pressure are not common (10). In this context, data are lacking on the effect of combined aerobic and strengthening exercise on CRP levels in CABG patients in various ethnicities.

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Effects of body mass index on early outcome of coronary artery bypass surgery.

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AIM: Obesity is commonly thought to be a risk factor for morbidity and mortality after cardiac surgery. The aim of the present study is to evaluate the effects of variations in body mass index on in-hospital outcome of coronary artery bypass grafting (CABG).

METHODS: The authors conducted a retrospective review of 10191 consecutive patients who had undergone isolated CABG at the center from February 2002 to November 2006. Patients were divided into four groups according to Body Mass Index (BMI). Underweight patients (BMI<18.5 kg/m(2)) were assigned to group 1 and obese patients (BMI 30 kg/m(2)) were put into group 4. Patients with normal BMI and those who were overweight were placed in group 2 and 3 respectively. RESULTS: Analysis of the BMI groups showed: of 10191 patients 0.7% was underweight; 31.2% of cases had normal BMI, 47.1%; overweight and 21.0% were obese. Compared with other groups, the members of the obese group were younger, included more women and were more likely to have all the risk factors for coronary artery disease except for cigarette smoking (P<0.0001). The underweight patients had an excess of left main coronary artery disease, previous history of myocardial infarction. In-hospital mortality did not show any difference between groups (P=0.46). There was a significant increase in postoperative gastrointestinal complications among the underweight group in comparison with other groups (P=0.027). CONCLUSIONS: According to this study, obese patients undergoing CABG are not at a greater risk of perioperative death and other adverse outcomes compared to normal weight. After CABG, underweight patients are at higher risk of developing gastrointestinal complications compared to normal patients.

PMD: 19202532 [PubMed - indexed for MEDLINE]
Endovascular repair of post-surgical pseudoaneurysm of suprarenal abdominal aorta in a patient with Behcet's disease.

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Vascular Behcet's disease has a poor prognosis. This poor prognosis is due to postoperative complications including pseudoaneurysm with 50% occurrence after previous surgical repair of aneurysm especially at the site of surgery. It is suggested that the fragility of the vascular wall may play a major role in this recurrence. Recent studies have demonstrated the effectiveness of endovascular stent-grafting for recurrent aortic aneurysm in patients with Behcet's disease. We present a recurrent aneurysm of the abdominal aorta at a previously scarred operative site in a known case of Behcet's disease. We attempted an endovascular treatment.

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PMID: 18677299
Factors predicting discontinuation of a hospital-based cardiac rehabilitation programme

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Abstract

Background: Cardiac rehabilitation (CR) programmes play an important role in the management of patients with coronary artery disease. However, a significant proportion of patients do not participate or do not complete CR.

Aim: To assess the prevalence and predictors of discontinuation of a hospital-based CR programme and to investigate whether or not the completers and dropouts differed in relation to their baseline characteristics.

Methods: Data used for analysis were from a hospital-based CR programme involving 1986 discharged patients at Tehran Heart Centre between July 2004 and January 2006. The patients who completed all 24 sessions of the CR programme were compared with the dropouts.

Results: The CR completion rate was 18.1% (average of 11.4±8.1, ranging from 1 to 78 sessions) including patients who completed 24 (n=284) or more sessions (n=77) of the CR programme. Factors predicting dropout were male gender (OR 1.441, p=0.0094), younger age (OR 0.979, p=0.005), and lower levels of education (OR 0.412, p <0.0001).

Conclusion: The present study demonstrated a relatively high rate of CR programme dropout. Only less than a fifth of the patients completed this hospital-based programme. Patients who were male and younger and had lower education levels were better likely to drop out of the CR programme. Social support and educational programmes may be helpful in achieving better compliance.

Key words: cardiac rehabilitation, dropout, attendance, coronary artery disease

Introduction

In the management of patients with coronary artery disease (CAD), cardiac rehabilitation (CR) programmes aim to help participants achieve lifestyle changes that will modify risk factors, using a combination of exercise, education, counselling, behavioural interventions, and support. A meta-analysis of pooled data from clinical trials and cohort studies has established significant reductions in all-cause and cardiovascular mortality of patients enrolled in exercise-based CR programmes [1-5]. Despite compelling research evidence identifying the biophysical and psychosocial benefits of participating in a multifaceted CR programme, estimates indicate that only 15-30% of eligible acute myocardial infarction (MI), coronary artery bypass graft (CABG) surgery, or percutaneous transluminal coronary angioplasty (PTCA) patients attend and complete these programmes [6-10]. Actually, the extent to which secondary prevention services are effective depends on the patient’s willingness and/or ability to adhere to the recommended strategies necessary to achieve the desired benefits. Cardiac rehabilitation programmes as secondary prevention services are clinically recommended for all patients with CAD [11].

Health care practitioners’ patterns of practice influences the referral rate of patients to CR programmes. However, patient’s characteristics and the availability of social support also influence the patient’s decision-making regarding attendance at CR programmes [10, 12-18]. In this context, few studies have investigated
Family history of cardiovascular disease as a risk factor for coronary artery disease in adult offspring.

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BACKGROUND AND AIMS: There is controversy about the role of positive family history as an independent risk factor for coronary artery disease. The aim of this work was to investigate the influence of family history on presentation of coronary artery disease in adult offspring, and on its severity. METHODS: In a retrospective cross-sectional study at Tehran Heart Center (University of Tehran Medical Sciences), 6399 patients with established coronary artery disease who underwent coronary angiography for standard indications were assessed. Coronary artery disease was defined as atherosclerotic involvement of more than 50% in at least one major coronary artery. RESULTS: 953 patients (14.9%) had a verified positive family history of coronary artery disease, of whom 193 patients (20.2%) and 215 patients (22.5%) had paternal and maternal positive history, respectively. The mean age of clinical onset of ischemic heart disease in patients with a positive history was significantly lower than patients with no history (p < 0.001). Left main coronary lesion was significantly more frequent in patients with positive history (p = 0.017). Multivariate logistic regression analysis demonstrated that presentation of coronary artery disease in the form of acute coronary syndrome was significantly more prevalent in the background of positive family history (odds ratio, OR = 1.44, 95% confidence interval, CI: 1.14-1.83, p = 0.002), especially above 45 years old. CONCLUSION: These findings indicate that positive family history is a major risk factor for coronary artery disease which strongly predisposes to the atherosclerotic process at younger ages; therefore, these patients should be evaluated and managed more intensively for other risk factors.

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Fast-track method in cardiac surgery: evaluation of risks and benefits of continuous administration technique

Najafi M

ABSTRACT

Introduction: Fast-track is a method proposed to decrease medical costs through the reduction of patients’ length of stay in the hospital. This study was carried out to assess the risks and benefits of conducting the fast-track method in cardiac anaesthesia and to evaluate the role of continuous infusion of short-acting anaesthetics in a successful fast-track protocol.

Methods: 100 cases were divided into two groups. In the fast-track group, fentanyl and propofol infusions were started at induction time and atracurium one hour later. No bolus drug was administered during the operation. Fentanyl infusion was continued up to 12 hours after surgery. The conventional extubation group received fentanyl and pancuronium as bolus doses. The two groups were evaluated for time of alertness and extubation in the intensive care unit, total analgesic dosage administered during the 24 hours after operation, arterial blood gas and peripheral saturation of oxygen before and after extubation.

Results: Time period between intensive care unit admission and alertness was significantly different in the fast-track (1.3 hours) and control (3.3 hours) groups (p-value is less than 0.001) as well as total time of intubation in the intensive care unit (4.3 hours vs. 7 hours) (p-value is less than 0.001). No patient of the fast-track group experienced low pressure of arterial oxygen, low saturation of arterial oxygen, high pressure of arterial carbon dioxide or need for reintubation in the first 24 hours after surgery.

Conclusion: Continuous infusion of drugs in the fast-track method facilitates earlier extubation. It maintains continuous sedation and analgesia without increasing respiratory complications.

Keywords: coronary artery bypass, fast-track, general anaesthesia, intensive care unit, length of stay, postoperative complications

INTRODUCTION

At the beginning, management of cardiac operation included high dose opioid anaesthesia with postoperative overnight sedation. The intensive care unit (ICU) is an important component of the total cost of management after coronary artery bypass grafting (CABG) and discharge from ICU is impossible when the patient is intubated. Thus, early extubation evolved as the main part of the fast-track method in cardiac anaesthesia.

There are various definitions for early extubation.(1) The window of opportunity for early extubation has been defined by Higgins as between three and ten hours after ICU admission.(2) By three hours, the patient is usually rewarmed and past the nadir ventricular dysfunction, and after ten hours, the incidence of complications increases. But the widely accepted definition is extubating patient within eight hours after surgery.(3)

Fast-track (FT) is a term intended to describe a multidisciplinary clinical pathway or process/procedure for patient care that is broad in concept and not limited to expeditious tracheal extubation. The scope of FT is aimed at cost containment strategies through decreasing the length of stay in ICU and hospital without increasing complications.(4) Approach of the first FT protocols was focused on low dose and/or short acting opioids. Now various methods of drug administration are proposed to accomplish FT goals.(5,6) There is no standard protocol for anaesthetics, usage in FT cardiac anaesthesia, and the best method of drug administration is a controversial issue which merits further investigation.(6) This study was conducted to compare the risks and benefits of a FT method compared to conventional anaesthesia in perioperative care of isolated CABG candidates. Besides, we evaluated the role of continuous administration of all intravenous drugs in decreasing intubation time.

METHODS

100 consecutive patients undergoing elective isolated CABG participated in the study with informed consent. Patients of six surgeons and one anaesthesiologist were recruited for this study. Exclusion criteria included the following:

- Previous CABG or heart valve surgery.

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First Database Report on Cardiothoracic Surgery in Tehran Heart Center

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Abstract

Background: The use of cardiac surgical database is necessary for evaluating and improving the quality of care. The aim of this report was to provide useful information for surgeons in Iran and other countries for their daily practice.

Methods: We analyzed data from 14288 consecutive patients in four different types of procedures, namely isolated coronary artery bypass grafting (CABG), combined CABG and valve (CABG-V), only valve (V), and other adult cardiac surgical operations from 2002 to 2006.

Results: The activity load increased from 1765 in 2002 to 3309 surgical operations in 2006 with almost 87.2% of activity being isolated CABG. The mortality rate for CABG was 1%, which decreased from 1.7% to 0.9% over the five years. The mortality rates for CABG-V and V were 5.8% and 4.8% in the last year of the study, respectively. Over the 5yr period, the proportion of urgent operations increased substantially from 4% to 24.5% (P< 0.0001), causing a reduction in elective operations. The mean length of hospital stay for the entire population was 8.38±5.74 d, which remained almost steady during the study period.

Conclusion: This database can serve as a valuable resource of preoperative measurers and surgical outcomes for surgeons and researchers with a view to improving overall surgical performance.

Keywords: Cardiac Surgery, Iran

Introduction

In the field of cardiothoracic surgery, the use of an up-to-date cardiac surgical database is necessary for evaluating and improving the quality of care, and there is no doubt that better results regarding each population can be achieved by evaluating data obtained from a subgroup of the same population.

By now, many surgery groups have established the national database for cardiac surgery (1- 3) and some of them have grown to be the largest database of their kind in medicine (4). It is clear that such datasets can present invaluable information on important issues such as work load, mortality rates, cost-benefit, and cost-effectiveness of procedures, all of which are important for governments and health care systems. These databases also provide an opportunity for developing and validating a clinical prediction rule for short-term and long-term outcomes of surgical procedures in the related population with a view to giving guidance to surgeons and other health professionals and thus improving different surgical and medical methods (5-9).

To that end, we present the first cardiac surgical database report: one of the 4 databases compiled in Tehran Heart Center (THC), which is affiliated to Tehran University of Medical Sciences. The main objective of this report is to present data which can be used by physicians in their assessment of the quality of care in cardiac surgery. The THC surgery database was established in 2002. THC is a large dedicated center for cardiovascular diseases in Iran, and patients are referred to this hospital from all over the country. The department of surgery consists of 7 operating rooms, one intensive care unit (ICU) for open heart surgery, 4 post-ICU wards, and 5 post-sur
Floating Thrombus in the Aortic Arch as an Origin of Simultaneous Peripheral Emboli

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ABSTRACT Few cases of a floating thrombus in a normal aorta have been reported without other underlying reasons for the thrombus formation and its systemic embolic complications. We report a case in which a floating thrombus in the proximal aortic arch was detected after echocardiography and computed tomography angiography as an origin of upper extremities and ophthalmic embolism. doi: 10.1111/j.1540-8191.2008.00694.x (J Card Surg 2008;23:762-764)

Systemic arterial emboli originating from an apparently normal aorta without atherosclerosis, aneurysm, or cardiosurgical or traumatic state are extremely rare. However, the formation of a floating thrombus in the proximal aortic arch potentially results in the central and peripheral embolizations.1 The clinicians pose a challenge for the diagnosis and therapeutic approach of this entity, especially if the thrombus is near the branches of the aortic arch.2 We report a case of a floating thrombus, detected within a nonaneurysmal, effectively normal aortic arch with no other underlying reason for the thrombus formation, presenting simultaneously with upper extremities and ophthalmic embolisms. We discuss the diagnostic modalities and surgical management.

CASE REPORT

A 49-year-old male patient of Iranian origin was referred to our center (in 2007) for a sudden and rapidly progressive (ie, within one minute) ischemia of the upper extremities and left eye. He complained of a severe pain in both hands and forearms, simultaneously accompanying a painful left eye globe with visual loss. The patient was evaluated and admitted to an ophthalmology center with the diagnosis of central retinal artery occlusion. After 10 days, he was referred to our center for further investigation as a cardiovascular origin of emboli was suspected. There was no history of cardiac diseases or thrombotic events, his being apparently in a good health. He had a history of smoking cigarettes (eight packs/year) and opium for at least 15 years. Also, he has been on a self-medication with dexamethasone (4 mg per day) four years ago. At admission, he had digital cyanosis and no detectable pulses of the ulnars, radials, and left brachial. The blood pressure was 110/60 mmHg, and the pulse rate was 72 beats/min. Other physical examination, chest roentgenogram, and electrocardiogram showed no abnormalities. Further investigation with a transthoracic echocardiography (TTE) revealed a floating thrombus (9 × 14 mm in size) in the proximal aortic arch (Fig. 1). It appeared to be attached at the origin of the brachiocephalic artery. The rest of the TTE and transesophageal echocardiography (TEE) examination was normal.

The laboratory analysis showed an increased erythrocyte sedimentation rate (50 mm/hour) and leukocytosis with neutrophilia. In the biochemistry profile, a mild rise in serum creatinine and urea was found. Further laboratory examinations (such as prothrombin time, partial thromboplastin time, antithrombin III, protein C, protein S, complement systems, lupus anticoagulant, anticirolipin, antineutrophil cytoplasmic antibodies-cytoplasmic [cANCA], antineutrophil cytoplasmic antibodies-perinuclear [pANCA], and antinuclear antibodies) showed no abnormalities. The result of activated protein C resistance test was found to be slightly lower than the normal limit.

A computed tomographic (CT) angiography confirmed a pedunculated mass at the beginning of the aortic arch. There was no evidence of atherosclerotic thickening or abnormal enhancement in the aorta (Fig. 2). In multislice CT cardiac coronary angiography,
**INTRODUCTION**

Coronary heart disease is the leading cause of death among both men and women worldwide. It is still considered a disease of men, and there has been little recognition of its importance in women. Gender differences have been reported to exist in acute and chronic ischemia in terms of clinical manifestations, investigations and treatment. Coronary artery bypass grafting (CABG) has been shown to be effective for treating angina pectoris and prolonging life in patients with severe coronary artery disease. However, it has not yet been determined whether women benefit from this procedure to the same extent as men. Observational studies comparing outcomes between women and men after CABG have provided conflicting evidence as to whether or not sex is an independent predictor of death, especially in the early postoperative period. The purpose of this study was to investigate the influence of sex on hospital mortality after isolated first-time CABG.

**PATIENTS AND METHODS**

Between September 2004 and March 2005, data on patients who underwent first-time on-pump (conventional) CABG in Tehran Heart Center were collected prospectively. The inclusion criteria were isolated elective operations. For all patients, preoperative data including known major risk factors (cigarette smoking, diabetes mellitus, hypertension, cerebrovascular accidents, myocardial infarction, hypercholesterolemia, family history of cardiac disease) and other clinical conditions (chronic pulmonary disease, chronic renal failure, dysrhythmias) as well as history of previous vascular interventions (peripheral vascular surgery, carotid endarterectomy, and percutaneous coronary interventions) were recorded on a standard data form by trained data collectors on the day of admission.
Hydatid Cyst of the Right Ventricle in Early Pregnancy

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Although hydatid cyst disease rarely involves myocardium and endocardium, cardiac echinococcosis, a potentially life-threatening condition, should be managed promptly. We report a case of right ventricle hydatid cyst detected after syncopal attack in a pregnant woman by using echocardiography.

Case Report

A 31-year-old pregnant female of Iranian origin from a rural area was admitted to our center (in 2007) with a syncopal attack, following spontaneous abortion (a 45-day fetus) and exertional dyspnea for 5 days. The patient developed orthopnea and platypnea following abortion without respiratory distress. Physical examination was unremarkable. Chest radiography showed an increased cardiothoracic ratio with abnormal configuration of its right border; but the lung fields were clear. Abdominal and pelvic ultrasonography, and a brain computed tomography scan revealed no positive findings. The laboratory analysis showed increased erythrocyte sedimentation rate (78 mm/h). The rest of the investigations were normal. Also, the serum titer of beta-HCG was <1 mIU/ml after abortion. On electrocardiography, there was a flat or inverted T-wave in Leads II, III and AVF, and a sinus tachycardia of 100 beats/min. Transthoracic echocardiography (TTE) revealed a round multiseptated cyst (43 × 42 mm) on the basal portion of her right ventricular free wall. It protruded into the right ventricular cavity and toward the annulus of tricuspid valve but without inflow or outflow tract obstruction. No involvement of pericardium and left ventricle was observed, except mild pericardial effusion (Fig. 1). In color Doppler imaging, there no flow through of the cystic mass was found. A transesophageal echocardiography (TEE) confirmed the large encapsulated cystic mass in the base of right ventricle significantly decreasing its cavity, accompanying mild pericardial effusion, and thickening of the adjacent pericardium (Fig. 2). There was also slight tricuspid regurgitation (mean TR gradient of 25 mmHg). Cardiac magnetic resonance imaging (MRI) evidenced a 38-mm-diameter round cyst-like mass that originated from the free wall of right ventricle. After injection of contrast medium, it appeared with a thick wall sharply defined, neither sign of bleeding nor communication between the mass and the cardiac chambers or pericardial space (Fig. 3). In cardiac catheterization and coronary angiography, the patient had a normal-appearing coronary angiogram and...
In-hospital and mid-term adverse clinical outcomes of a direct stenting strategy versus stenting after pre-dilatation for the treatment of coronary artery lesions

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Summary

Background: Direct stenting without balloon dilatation may reduce procedural costs and duration, and hypothetically, the restenosis rate. This study was designed to compare the in-hospital and long-term outcomes of direct stenting (DS) versus stenting after pre-dilatation (PS) in our routine clinical practice.

Methods: The 1 603 patients treated with stenting for single coronary lesions were enrolled into a prospective registry. Patients with acute myocardial infarction (MI) within the preceding 48 hours, and those with highly calcified lesions, total occlusions, or a lesion in a saphenous graft were excluded. The baseline, angiographic and procedural data, in-hospital outcomes and follow-up data were recorded in our database and analysed with appropriate statistical methods.

Results: Eight hundred and fifty-seven patients (53.5%) were treated with DS and 746 (46.5%) underwent PS. In the DS group, lesions were shorter in length, larger in diameter and had lower pre-procedural diameter stenosis. Type C and diffuse lesions and drug-eluting stents were found less often (p < 0.001). With univariate analysis, dissection and non-Q-wave MI occurred less frequently in this group (0.2 and 0.6% vs 3.9 and 2.1%, p < 0.001 and p = 0.01, respectively). However, the cumulative major adverse cardiac events (MACE) did not differ significantly (4.9 vs 4.6%, p = 0.79). With multivariate analysis, direct stenting reduced the risk of dissection (OR = 0.07, 95% CI: 0.01–0.33, but neither the cumulative endpoint of MACE (OR = 1.1, 95% CI = 0.58–2.11, p = 0.7) nor its constructing components were different between the groups.

Conclusions: Direct stenting in the real world has at least similar long-term outcomes in patients treated with stenting after pre-dilatation, and is associated with lower dissection rates.

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Since the advent of balloon angioplasty, the introduction of coronary stents has been the most important turning point in the percutaneous management of coronary artery lesions. Coronary stents are associated with more effective dilatation and predictable in-hospital outcomes, higher procedural success rates, and a decreased need for target-vessel revascularisation.14 Stents are now used in over 80% of percutaneous coronary interventions.7

The standard stent implantation technique requires routine pre-dilatation with a balloon catheter to allow an easy passage of the stent and to enhance a complete expansion of all stent supplies.4 Furthermore, by reducing the extent of vessel injury, direct stenting has been postulated to be relevant in reducing the restenosis rate.15 However, a number of disadvantages have been suggested for direct stenting, including failure to cross the lesion, incomplete stent deployment, an increase in guide trauma, undersizing the stent, and poor visualisation, which may result in errors in stent positioning.15

Animal models have shown that direct implant of a stent reduces the degree of intimal hyperplasia in comparison with prior balloon dilatation.16 However, randomised clinical trials have not proven the positive effect of direct stenting in reducing the restenosis rate. This study was designed to compare the in-hospital and long-term outcomes of direct stenting versus stenting after pre-dilatation in our routine clinical practice.

Methods

Between March 2003 and 2005, 1 603 patients were enrolled in a prospective registry. The criterion for inclusion into the registry was the implantation of stents for single native coronary lesions with ≥ 50% stenosis in patients with no acute myocardial infarction (MI) within the preceding 48 hours. Patients with a highly calcified lesion, total occlusion, or a lesion in a saphenous graft were excluded from the study. The decision whether or not to pre-dilate was based on the attitudes of the operators. The mean age of participants was 55.96 ± 10.50 years (range: 25–88).
Is preoperative serum creatinine a reliable indicator of outcome in patients undergoing coronary artery bypass surgery?

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Objective: Evaluating renal function by calculating creatinine clearance as an alternative measure to serum creatinine may give a better estimation of postoperative renal function in patients undergoing coronary artery bypass grafting.

Methods: Using our database, we conducted a retrospective review of the records of all 11,884 patients aged 21 years or older undergoing pure bypass grafting who required cardiopulmonary bypass. Preoperative renal function was categorized as normal renal function (serum creatinine ≤1.1 mg/dL and creatinine clearance > 60 mL/min), occult renal insufficiency (serum creatinine ≤ 1.1 mg/dL and creatinine clearance ≤ 60 mL/min), mild renal insufficiency (1.1 mg/dL < serum creatinine ≤ 1.5 mg/dL and creatinine clearance ≤ 60 mL/min) or moderate renal insufficiency (serum creatinine > 1.5 mg/dL and creatinine clearance ≤ 60 mL/min).

Results: Out of 11,884 patients in the sample, 7856 (66.1%) had normal renal function, and 706 (5.9%) had occult renal insufficiency. The rate of postoperative mortality, renal failure, atrial fibrillation, prolonged ventilation, intra-aortic balloon pump usage, and prolonged hospital stay (>7 days) was higher in patients with occult renal insufficiency than in the normal group in univariable analysis. Multivariable logistic regression analysis demonstrated that patients with occult renal insufficiency compared with the group with normal renal function were at higher risk for mortality (odds ratio = 2.59, 95% confidence interval 1.15–5.86; P = .022) and prolonged hospital stay (>7 d) (odds ratio = 1.30, 95% confidence interval 1.08–1.57; P = .005).

Conclusions: To identify higher-risk patients requiring special intensive care, and in whom new interventions can be performed to improve outcome, we recommend the preoperative calculation of creatinine clearance, especially in older women with a lower body mass index.

Preoperative renal dysfunction is a significant risk factor that influences the outcome of cardiac surgery.1,2 With the rapid rise in the aged population, more patients with renal insufficiency (RI) are being referred for coronary artery bypass graft (CABG) operations.3 Patients with impaired renal function undergoing CABG surgery present a higher operative risk, a higher incidence of morbidity and need for dialysis, and prolonged hospital length of stay after CABG.4 Elevated serum creatinine (Cr) level is not a reliable screening test for renal impairment because it has important limitations. Serum Cr level varies with factors aside from renal function, such as age, sex, muscle mass, hypertension, and metabolism; therefore, it can remain within the normal range even when renal function is significantly impaired.5 Creatinine clearance (CrCl), as an alternative measure of preoperative renal reserve, is the most useful clinical estimate of glomerular filtration rate. Direct measurement of CrCl is more accurate, but cumbersome, and not a possible option in routine clinical practice or large clinical studies.6 Using prediction formulas that estimate glomerular filtration rate with moderate precision and accuracy would be a practical solution. Among the formulas, the Cockcroft–Gault equation was chosen because it is calculated by readily available clinical data and is reasonably associated with measured CrCl in patients with cardiac disease.7,8

The aims of this study were (1) to define the preoperative demographics as well as intraoperative and postoperative characteristics of patients undergoing CABG who have occult RI (serum Cr ≤ 1.1 mg/dL and CrCl ≤ 60 mL/min) and (2) to examine the hypothesis whether CABG patients with occult RI incur greater morbidity and mortality than CABG patients with normal renal function (NRF) (serum Cr ≤ 1.1 mg/dL and CrCl > 60 mL/min).

METHODS

Demographic, intraoperative, and in-hospital outcome data were collected prospectively and entered into a computerized database on all patients undergoing cardiac surgery at our institution (Tehran Heart Center). After institutional ethics approval was obtained, the records of all 11,884 patients aged 21 years and older undergoing pure CABG between January 2002 and February 2007 were retrieved from this database for analysis. Other cardiac procedures such as cardiac valve surgery and surgery for congenital heart disease were excluded from the study.

Because of the retrospective nature of the study, requirement for written informed consent was waived by the ethics committee. All entries were based on definitions of the Society of Thoracic Surgeons. Patients’ data...
Primary cardiac tumors are rare and usually benign. Hamartoma is a benign overgrowth of mature differentiated cells of the organ in which it is found. The mass results from anomalous development of embryonic cells. It grows noninvasively in line with the rate of the surrounding tissue, and ceases when the affected organ reaches maturity. In the heart, hamartomas with the characteristic histological appearance of mature cardiac myocytes are rare, especially as an isolated mass in the right atrium.

A 58-year-old man presented with progressively worsening chest pain for 1 month. He had history of hyperlipidemia and smoking. There was no significant past medical history or family history of arrhythmia or other cardiac disease. An electrocardiogram showed normal sinus rhythm. Echocardiography revealed trivial mitral regurgitation, mild aortic valve thickening, mild tricuspid regurgitation, mild hypertrophy of the interventricular septal wall, and no evidence of a mass. Coronary angiography showed significant stenosis in the left anterior descending coronary artery (100%), right coronary artery (100%), circumflex artery (70%–90%), and obtuse marginal (50%–70%), and an ejection fraction of 45%. Coronary artery bypass grafting was undertaken. On right atrial cannulation, multiple clot-like fragments entered the cannula. The material was sent for histopathological examination. Coronary artery bypass grafting was performed, and the patient has remained asymptomatic for 2 months postoperatively.

Macroscopically, the specimen consisted of multiple fragments of dark brown clot-like tissue, measuring 1.5 × 1 × 0.5 cm. A small creamy-gray mass with irregular shape, measuring 1.1 × 0.4 × 0.4 cm was present. Microscopically, sections revealed a demarcated mass consisting of enlarged mature myocytes with disorganization, some of the cells were vacuolized with focal fibrosis, malformed blood vessels, and nests of mature adipocytes (like epicardium). Spider-like cells were not seen. Focal mature adipocytes were noted with mild lymphocytic infiltration in peripheral areas, indicative of cardiac hamartoma. This type of hamartoma has been rarely reported as an isolated mass in the right atrium.
Images in Cardiovascular Pathology

Mesothelial/monocytic incidental cardiac excrescence

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Abstract

Mesothelial/monocytic incidental cardiac excrescence (MICE) is a very uncommon lesion. Diagnosis is incidental and may simulate thrombotic lesions. One of the hypotheses with regard to the etiology of this lesion is a previous cardiac procedure especially mitral valve repair or commissurotomy. Herein, we describe a MICE incidentally found in a patient who underwent mitral valve replacement, as a thrombotic lesion on the left atrial auricle. Histopathologic examination suggested MICE lesions and immunohistochemical stains confirmed it. © 2008 Elsevier Inc. All rights reserved.

Keywords: Mesothelial/monocytic incidental cardiac excrescence (MICE); Mesothelin; CD68

1. Case report

1.1. Clinical finding

A 54-year-old woman with a history of severe mitral stenosis (MS), stroke, and left-sided hemiplegia underwent percutaneous transmitral commissurotomy (PTMC) for severe mitral stenosis. She was admitted with severe dyspnea and palpitation. Transesophageal echocardiography showed severe MS, mild mitral regurgitation, moderate to severe tricuspid regurgitation, a small fixed clot at the tip of the left atrial auricle (LAA) with severe “smoke” in the left auricle, and an ejection fraction of 55%. Mitral valve replacement and tricuspid repair were performed and the LAA clot removed and sent for histopathologic examination.

1.2. Histopathology

The specimen received as left atrium thrombus consisted of a fragment of irregular creamy brown-colored tissue measuring $0.4\times0.3\times0.2$ cm, and microscopic examination revealed a tumor composed of mesothelium-like cells arranged in strips, tubules, and sheets surrounded by smaller histiocytes. Large vacuoles, representative of mature adipocytes, were also present. A large amount of fibrinous material within and around the sheets of cells was present. There was no evidence of atypia or other malignant changes (Fig. 1A). Immunohistochemical stains were positive for CD68 as a marker for histiocyte (Fig. 1B), for CK-AE1/AE3, and for CK5/6 (Fig. 1C), and also for calretinin and mesothelin as markers for mesothelial cells (Fig. 1D).

2. Discussion

The MICE is a lesion composed of a mixture of histiocytes, mesothelial cells, inflammatory cells, and fibrin found incidentally in cardiac chambers, on cardiac valves, or free floating in the pericardial sac [1]. Wu et al. [2] reported in a literature review that 55% of the lesions were identified in specimens obtained from mitral valve repair surgery and other surgical procedures including coronary artery bypass, right ventricular biopsy, aortic and pulmonic valve repair, mitral valve commissurotomy, and repair of tetralogy of Fallot. Thirty-seven percent of the lesions were found in the left atrium, 16% on the mitral valve, and 20% in the pericardium.

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INTRODUCTION
Mechanical circulatory assistance is frequently needed to support the failing heart. An intraaortic balloon pump (IABP) is usually the first choice of mechanical device for perioperative cardiac failure. It reduces ventricular afterload, improves diastolic coronary perfusion, and enhances subendocardial perfusion. The IABP has been in widespread clinical use for hemodynamic support since it was introduced in 1968. Several studies have focused on prognostic factors for death in patients treated with an IABP, and there is great variability in the results because of the diversity of indications for IABP and patient populations. This retrospective study was carried out to analyze the hospital outcome of patients who underwent open heart surgery with IABP support, and to determine the prognostic factors for hospital mortality.

PATIENTS AND METHODS
Of 12,736 patients who underwent open heart surgery over a 4-year period (January 2002 to September 2006), IABP support was required in 475 (3.7%). They comprised 307 (64.6%) men and 168 (35.4%) women, with a mean age of 60.36 ± 10.25 years and mean body mass index of 26.22 ± 4.19 kg·m⁻². There were 200 (42%) patients in New York Heart Association functional class III and IV, and 251 (53%) had a history of myocardial infarction. Intraaortic balloon pump insertion was performed before the operation in 20 (4%) cases, during the operation in 380 (80%), and postoperatively in 75 (16%). The operations were for ischemic heart disease (coronary artery bypass grafting with or without another procedure on the atrium or ventricle) in 440 (93%) patients, for valvular heart disease in 119 (25%), and for both coronary artery bypass and valve surgery in 91 (19%). All medical records of these patients were retrieved from our hospital surgery databank, and variables that might influence the outcome were collected and grouped into pre-, intra-, and postoperative subsets. The patient record forms contained 214 variables (91 pre-, 73 intra-, and 50 postoperative variables). Definitions of all variables were according to the STS Adult Cardiac Database. The early major and minor complications
Ostial lesions of left main and right coronary arteries: demographic and angiographic features.

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In 258 patients with left main tract disease, the atherosclerotic risk factors were compared between patients with ostial and nonostial lesions of the left main coronary artery. Also, it was done for patients with ostial right coronary artery. Women were more likely to have ostial left main coronary artery and/or ostial right coronary artery. A multivariate logistic regression analysis revealed that the female sex (odds ratio: 2.336) and hypertriglyceridemia (odds ratio: 1.004) were independent risk factors of ostial left main coronary artery lesion. For ostial right coronary artery lesion, the female sex and family history of coronary artery disease were independent predictors. Ostial left main coronary artery and right coronary artery lesions were strongly correlated. The demographic and clinical profiles of ostial stenosis suggest that this group may represent a distinct entity, different from the more common atherosclerotic left main trunk stenosis (LMTD). The female sex and serum triglyceride level can be considered as independent predictors of ostial left main tract disease.

PMD: 18388058 [PubMed - indexed for MEDLINE]
Predictors of quality of life among patients undergoing coronary artery bypass surgery.

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OBJECTIVE: Improving the quality of life (QoL) in patients with coronary artery disease (CAD) requires the determination of the risk factors that have an impact on physical functioning and mental health. The present study sought to determine the risk factors influencing QoL in patients with CAD and to assess the relationship between preoperative QoL and early outcome of CABG. METHODS AND RESULTS: The SF-36 questionnaire was completed through interviews with 275 consecutive patients who underwent isolated CABG in the Tehran Heart Centre between May and September 2006. The present study measured the two scores of physical and psychological component summary scores and assessed their relationships with preoperative characteristics and postoperative complications. The mean scores of physical and psychological components were 65.78 +/- 24.13 and 67.72 +/- 20.55, respectively. Diabetes mellitus (P = 0.007), family history of CAD (P = 0.032), low education level (P = 0.015), high Euroscore (P = 0.022), and high functional class (P < 0.001) were the main predictors for the low physical score of QoL. In addition, female gender was associated with a low QoL psychological score (P < 0.001). However, the elderly patients had a higher psychological score in comparison with the younger ones (P = 0.032). No relationship between the studied postoperative complications and preoperative psychological and physical scores was found. CONCLUSIONS: Female gender and lower age show specific influences on the patients' mental health. Our findings also indicate a major direct influence of general risk factors for CAD and education level on CAD patients' physical functioning before CABG. Nonetheless, preoperative QoL does not influence the postoperative complications.

PMID: 19157166 (PubMed - indexed for MEDLINE)
Relationship Between Myocardial Viability and Coronary Run-Off in Jeopardized Myocardium

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ABSTRACT  Objective: The aim of this study was to evaluate the relationship between coronary run-off and myocardial viability in jeopardized regions. Method: We studied 50 patients (40 male, mean age: 55.63 ± 10.54 years) with coronary artery stenosis >70% and ejection fraction <40% referred for viability study via dobutamine stress echocardiography. The relationship between coronary run-off and viability was evaluated. Good run-off demonstrates good or moderate and no run-off means poor or no run-off. Results: In the apical region, 33% of the segments with good antegrade run-off were viable and 67% nonviable. Also, 72% of the segments with no run-off were nonviable and 28% viable. In the midportion region, 70% of the segments with good antegrade run-off were viable and 30% nonviable; 50% of the segments with no run-off were nonviable and 50% viable. In the basal region, 85% of the segments with good antegrade run-off were viable and 15% nonviable; 19% of the segments with no run-off were nonviable and 81% viable. The proportion of the nonviable segments increased significantly from the basal to apical regions either with good (p < 0.001) or no run-off (p = 0.004). From 239 viable segments, 58.6% had antegrade, 15.4% retrograde, and 25.5% no run-off. Of 181 nonviable segments, 44% had antegrade, 34% retrograde, and 34.8% no run-off. Conclusion: There was more susceptibility to nonviability in the apical regions despite good run-off, while the basal segments showed more viability in spite of having no run-off. The findings may be helpful for selecting patients with coronary artery disease and left ventricular systolic dysfunction that benefit from revascularization. doi: 10.1111/j.1540-8191.2009.00847.x (J Card Surg ****;**:**-**)

Patients with left ventricular (LV) dysfunction and coronary artery disease (CAD) undergoing surgical revascularization have clinical benefits as well as recovery of global and regional LV dysfunction.1-5 Different studies have shown that ventricular dysfunction in some patients with severe CAD may be due to viable hibernating myocardium rather than irreversible scar and that myocardial contractility frequently improves after revascularization if ventricular dysfunction is be-gotten by hibernation.6,7 For these reasons, the assessment of myocardial viability is an important aspect of diagnostic and prognostic evaluations of patients with CAD and low ejection fraction. Also, clinical practice has revealed that the collaterals will be sufficient to maintain a full systolic contractile function in some patients, whereas in others, they may be just sufficient to provide a minimum nutritional supply to the hibernating myocardium.8 It has been suggested that a poor coronary blood flow may have adverse effect on the outcome of patients undergoing coronary artery bypass graft (CABG) surgery;9 nonetheless, the relationship between the coronary blood flow assessed by TIMI (thrombolysis in myocardial infarction) flow or run-off and viability remains a matter of debate among physicians. There are few studies into the correlation between viability and the coronary blood flow.10 One of them found no correlation between TIMI flow and viability assessed by nuclear imaging. It is also worthy of note that there is a paucity of data on whether there are distinctive differences in the coronary blood flow between viable and nonviable segments. In this study, we sought to investigate relationship between viability detected by dobutamine stress echocardiography and coronary run-off in jeopardized regions.

MATERIAL AND METHODS

Dobutamine stress echocardiography for the assessment of myocardial viability was performed in patients with angiographically proven CAD. Patients were included in this prospective study if they had significant stenosis (>70% diameter reduction) in one of major coronary arteries and LV ejection fraction <40%. Baseline exclusion criteria were concomitant cardiomyopathy and valvular heart disease, permanent atrial fibrillation, left bundle branch block, and ventricular fibrillation.
Successful deployment of an atrial septal occluder device in a patient with an insufficient posterosuperior defect rim

Yetersiz arka-ön rim defekti olan hastada atriyal septal oklüder’in başarılı yerleştirilmesi

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Introduction
Transcatheter closure of atrial septal defects (ASDs) has more favorable outcomes than surgery in selected anatomically suitable ASDs due to superior cosmetic results, the avoidance of cardiopulmonary bypass, a lower incidence of postoperative complications, and a shorter hospital stay (1). However, device embolization and malposition, and thrombus formation may occur as complications (2). Anatomically, ASDs
Discussion

Thymomas are slow growing neoplasms of the thorax known to have a good prognosis when classified as benign (Masaoka class I or WHO type A). However, despite the noninvasiveness of this first group, thymomas are potentially invasive [3]. Histological examination showed no evidence of metastasis or invasive growth in the case reported here, and we were able to resect the tumor in toto. This fact and the fact that it was composed entirely of epithelial cells as demonstrated by the histological examination led us to presume that there will be no risk of metastasis. Furthermore, no effect on survival has been documented for types A, AB or B1 after radiotherapy [4]. Therefore, we refrained from postoperative radiotherapy.

Nevertheless, there must have been a late phase of invasive growth in our patient, as tumorous tissue had come into contact with the pericardial space and caused an effusion, suggesting a steady state of growth for more than 20 years. As this resulted in a potentially life-threatening situation, we recommend resection or at least frequent controls of patients presenting with intrathoracic tumorous lesions, even if there has been no evidence of growth for a long period of time.

References


Survival after More than 700 DC Shocks Post-Coronary Artery Bypass Grafting: A Case Report

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Abstract

Shock-resistant ventricular fibrillation is a rare but fatal situation and is defined as ventricular fibrillation persisting after three defibrillation attempts. We report the case of an unusually drug and shock-resistant, high-frequency recurrent ventricular fibrillation that was treated with 700 direct current shocks within a period of 7 days after coronary artery bypass grafting.

Key words
Cardiovascular surgery • coronary bypass surgery • thoracic surgery

Introduction

Transient ventricular arrhythmia can occur after recent cardiac surgery, but it does not adversely influence the long-term outcome [1,2]. Ventricular tachycardia (VT) can happen unexpectedly after coronary artery bypass grafting (CABG) and may be the result of several factors related to either subclinical graft occlusion or increased dispersion of repolarization secondary to reperfusion [3]. We present an unusually high-frequency recurrent VT/ventricular fibrillation (VF) (700 episodes) after CABG.

Case Report

A 58-year-old man with a history of hypertension and hyperlipidemia was admitted with typical chest pain for the evaluation of myocardial infarction (MI). His ECG revealed anteroseptal MI with...
The Association Between Coronary Arterial Dominancy and Extent of Coronary Artery Disease in Angiography and Paraclinical Studies

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The association between coronary arterial dominance patterns and the coronary artery diameter, length, and valvular heart diseases were previously studied. However, its association with coronary artery disease (CAD) is unclear. We investigated to determine whether the extent and localization of CAD differ in right, left, or codominant coronary arterial patterns. Twelve thousand five hundred eighty patients admitted to Tehran Heart Center for coronary angiography were studied retrospectively (2004–2006). The extent and localization of CAD and the dominant artery were determined. There were 62.7% males. The mean age was 57.6 ± 10.3. 84.2% [95% confidence interval (CI); 83.6–84.8%), 10.9% (95% CI; 10.4–11.4%), and 4.8% (95% CI; 4.4–5.2%) of the patients were right, left, and codominant, respectively; No significant difference considering age, sex, positive family history, hypertension, hyperlipidemia, electrocardiography, exercise treadmill stress test, and perfusion scan were seen in the groups. The right-dominant patients tend to have three-vessel disease (33.1% vs. 27%, P < 0.0001), stenosis of more than 50% in right coronary artery (65.9% vs. 57.9%, P < 0.0001) and left circumflex territories (64% vs. 59.4%, P = 0.01), more than the left-dominant patients. The involvements of the left main coronary artery, left anterior descending artery territory, and posterior descending artery were not significantly different. This study demonstrates a relationship between angiographic CAD severity, and the involved arterial territory and dominancy patterns. Clin. Anat. 21:519–523, 2008.

Key words: coronary disease; perfusion; dominant coronary artery; angiography

INTRODUCTION

Various forms of coronary artery anatomy were studied after the introduction of selective coronary artery catheterization by Sones and Shirey (Kaimkhani et al., 2005). The term coronary artery dominancy was first described on the basis of coronary artery size, but after more investigation, the artery that gives rise to the posterior descending artery

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Tissue cardiomyoplasty using multi-layer cell-seeded nano-structural scaffolds to repair damaged myocardium: an experimental pilot study

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Abstract

Introduction: The emerging fields of tissue engineering and biomaterials have begun to provide potential treatment options for heart failure. Tissue engineering approaches are designed to repair damaged cardiac tissue through the use of cellular transplantation, and biodegradable scaffolds. In an experience for the first time in Iran applying nanobiotechnology in heart tissue engineering, we investigated the outcome of a multi-layer nanostructural scaffold containing cardiac and endothelial cells grafted on the infarcted heart.

Material and methods: Myocardial infarction was induced in sheep by ligation of the distal portion of the left anterior descending coronary artery. Biopsy of the left ventricular cardiac muscle and jugular vein was obtained. Tissue samples were isolated and cultured in vitro. Cultured cardiac and endothelial cells were seeded onto the layers of poly(ε-caprolactone)/collagen biodegradable scaffolds. After two months, the scaffold was sutured on the surface of the infarcted myocardium.

Results: Eight weeks after implantation, there was remarkable thickening as well as decreased paradoxical motion of the ventricular wall in echocardiographic evaluation. There was no significant improvement in global ejection fraction. In microscopic examinations by Masson’s trichrome staining and immunohistochemical analysis, viable cells were observed within layers of the scaffold with incorporation of the graft into the adjacent myocardium. There were also spectacular amounts of vascularization in the grafted material.

Conclusions: Our data demonstrate that engraving of multilayer cell-seeded nanostructural scaffolds can induce angiogenesis in the implanted region. Such tissue engineered cells containing scaffolds are a promising means of tissue cardiomyoplasty in the field of regenerative medicine. Further studies are however encouraged to investigate the physiopathological aspects of heart tissue engineering.

Key words: tissue scaffolding, heart failure, cell transplantation, myocardial infarction, sheep, polycaprolactone, collagen.
Transcatheter Closure of a Coronary Fistula with an Amplatzer® Vascular Plug
Should a Retrograde Approach Be Standard?

Coronary artery fistulae are rare disorders. Only 2 reports in the medical literature discuss the use of vascular plugs to occlude coronary fistulae, and the same device—the Amplatzer® Vascular Plug—was deployed via different techniques to treat those patients. The safety, the feasibility, and the standard approach to deployment have yet to be established.

Herein, we describe the case of a 15-year-old boy who presented with a continuous murmur at the left sternal border. The patient was diagnosed with a large coronary fistula that originated from the right coronary artery and emptied into the right atrium. He underwent transcatheter closure of the fistula. We placed a 14-mm Amplatzer® Vascular Plug into the narrowest part of the fistula, which resulted in complete occlusion and an excellent outcome.

Our retrograde approach is simple and obviates the need to establish arteriovenous loops or to insert additional devices, such as coils. In this report, we compare our results with those of the 2 previous reports. To our knowledge, this is only the 2nd report that describes the closure of a coronary fistula in an adolescent patient by use of an Amplatzer® Vascular Plug. (Tex Heart Inst J 2008;35(1):58-61)

Despite the recent publication of 2 valuable reports1,2 on the use of the Amplatzer® Vascular Plug (AGA Medical Corporation; Plymouth, Minn) to treat coronary artery fistulae, little evidence appears in the medical literature regarding the safety and feasibility of this treatment. Furthermore, a standard application technique has yet to be established.

Herein, we describe the case of a 15-year-old symptomatic boy who had a large coronary fistula that arose from the right coronary artery (RCA) and drained into the right atrium. The patient was treated with an Amplatzer Vascular Plug via a simple technique that did not require the creation of arteriovenous loops. We compare and contrast our technique with those in the existing reports.

Case Report

In March 2007, a 15-year-old boy was referred to our center with dyspnea on exertion (New York Heart Association functional class II). On physical examination, a grade-3 continuous murmur was heard, most loudly at the left sternal border. An electrocardiogram showed no evidence of ischemia, and chest radiographs were normal. Transthoracic echocardiography (TTE) revealed a turbulent systolic-diastolic flow with diastolic accentuation in the right atrium. The origin of the RCA was extremely dilated (by 10 mm). There was mild right atrial and ventricular dilation (QP/QS=1.5), and the patient’s systolic pulmonary artery pressure was approximately 33 mmHg. The diagnosis was made by TTE; however, to attain a more thorough evaluation and specifically to rule out an atrial septal defect, we performed transesophageal echocardiography (TEE). On TEE, the course of the fistula in the right atrium was evident—running close to the interatrial septum, the fistula entering the atrial orifice near the right upper pulmonary vein. There was no atrial septal defect, so the TTE diagnosis was confirmed. Diagnostic cardiac catheterization and coronary angiography revealed a significant 1.7:1 left-to-right shunt, mild pulmonary hypertension (pulmonary artery pressure, 35 mmHg), normal epicardial coronary arteries, and a large coronary fistula that arose from the ostium of the RCA and drained into...

Key words: Adolescent; arteriovenous malformations/diagnosis/surgery; blood vessel prosthesis implantation/instrumentation; constriction, pathologic/physiopathology; coronary vessel anomalies/physiopathology; embolization, therapeutic/methods; fistula/diagnosis/surgery/therapy; heart catheterization/instrumentation/methods; prostheses and implants; treatment outcome; vascular fistula/diagnosis/physiopathology

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Unusual presentation and echocardiographic management of giant mural endocarditis occurring simultaneously with aneurysmatic aorta.

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We describe a 32-year-old man who presented in a febrile, unconscious state with unusual staphylococcal endocarditis. We diagnosed the patient's illness by using transthoracic echocardiography (TTE), which revealed a giant vegetation on the left ventricular lateral wall. The patient had history of aortic valve replacement and coarctoplasty. Conservative treatment using repeated TTEs resulted in successful management of endocarditis and embolic brain abscess. After discharge, the patient underwent aortic reconstruction for the aneurysmatic dilatation of ascending aorta. This report confirms that chronic endocardial trauma may provide a fertile nidus for the development of bacterial vegetation. The clinical, echocardiographic, and laboratory findings contributed to therapeutic decision-making in the management of this case.

PMID: 19073534 [PubMed - indexed for MEDLINE]
A Novel Approach for Repairing of Intestinal Fistula Using chitosan hydrogel.


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Intestinal fistula is associated with high morbidity and difficult to manage. Many fistulas require surgical treatment, which usually consists of segmental resection. In this study, using a rat model, the effectiveness of chitosan hydrogel as an intestinal fistula repair agent was investigated. Twenty rats underwent laparotomy under general anesthesia. The antimesentric portion of the cecum was incised (1 cm) and sutured to the abdominal wall. Chitosan hydrogel was applied daily to the fistula until it was completely closed. Blood samples taken from all animals were analyzed. After sacrifice, the cecum was removed and histopathologic investigation was performed. Spontaneous closure of the intestinal fistula was observed in all animals for both the control and chitosan hydrogel groups. Healing in the chitosan hydrogel group healing was faster than that in the control group. Blood analysis revealed significant differences between the chitosan hydrogel and control groups with regard to the total protein, albumin, total cholesterol and HDL before the surgery versus that on the day of sacrifice. Pathologic investigation also showed greater healing in the chitosan hydrogel group than the control group. This preliminary study showed the potential of chitosan hydrogel for repair of intestinal fistula. However further studies must be performed before we can approve testing chitosan hydrogel for intestinal fistula repair in humans.

PMID: 19204059 [PubMed - as supplied by publisher]
Case Report

Aortic dissection type I in a weightlifter with hypertension: A case report

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Abstract

Acute aortic dissection can occur at the time of intense physical exertion in strength-trained athletes like weightlifters, bodybuilders, throwers, and wrestlers. Rapid rise in blood pressure and history of hypertension are the most common causes of aortic dissection in athletes. It is a very tragic event because of its high mortality rate of about 32% in young patients. We report a case of aortic dissection in a young weightlifter with an extensive intimal tear of the aorta, from the sinus of Valsalva to the abdominal aorta.

Introduction

Acute aortic dissection results from a tear in the intima and media of the aortic wall, with the subsequent creation of a false lumen in the outer half of the media and elongation of this channel by pulsatile blood flow. Dissection of the aorta is associated with a high degree of morbidity and mortality despite continuing improvements in diagnostic and surgical techniques [1], and hypertension is present as the most common cause in 70–90% of patients with aortic dissection [2]. A number of normal daily and athletic activities require isometric or static exercise. Sports such as weightlifting and other high-resistance activities are used by power athletes to gain strength and skeletal muscle bulk. These exercises significantly increase blood pressure, heart rate, myocardial contractility, and cardiac output. Hypertension has long been recognized as an important risk factor for the development of aortic aneurysms and dissections [1,3]. Also, it has been speculated that the very high blood pressure generated during the lifting of weights, particularly with staining accompanied by a Valsalva maneuver, may be the cause of an aortic intimal tear [3]. Pre-participation cardiovascular evaluation of young competitive athletes is warranted on the basis of the available evidence [4]. Patients with predisposing conditions to aortic dissection, including hypertension, should be sturdily encouraged to refrain from weightlifting. We present a case of aortic dissection in a young athlete with a history of hypertension.

Case presentation

A 37-year-old Iranian man with a history of hypertension and long history of weightlifting was admitted to our hospital complaining of knifelike retrosternal chest pain, which was abrupt while lifting weight, accompanied by severe sweating and palpitation. Distal pulses were weakly palpable. Electrocardiography showed non-sinus arrhythmia, Wolf-Parkinson-White (WPW) syndrome, and Q in lead III and avf. Echocardiography findings were normal left ventricular size with concentric left ventricular hypertrophy (LVH), left ventricular ejection fraction (LVEF) of about 55%, dilated ascending aorta of about 56 mm, and mild mitral regurgitation. In addition, the intimal flap in
CORONARY ARTERY BYPASS SURGERY IN TEHRAN HEART CENTER

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Abstract-

Coronary artery bypass grafting (CABG) surgery is being performed increasingly in Iran. So far, no large-scale report has described characteristics and risk factor profile and in-hospital mortality of patients undergoing this procedure in Iran. We conducted this study to address these topics in order to help clarify Iran’s current state of CABG and to provide assistance in planning combat against coronary artery disease based on frequency of major risk factors. Patients who underwent isolated, first-time, elective, on-pump (conventional) CABG in a cardiac surgery center in Tehran were prospectively studied from September 2004 and March 2005. Demographic data, risk factor profile and discharge status for each patient were recorded. There were 1258 patients, 937 men (74.5%) and 321 women (25.5%). The mean age was 58.7 years (range 28 to 81); 133 patients (10.6%) were 70 years old or older. Mean body mass index (BMI) was 27.01 and 42.2% of the patients were smokers, 39.4% were hypertensive, and 27.6% had diabetes. Family history was positive in 40.3%. Congestive heart failure was found in 26.6%. New York Heart Association functional class III or IV was observed in 52.8% of patients. Single-vessel, two-vessel, and multi-vessel disease was found in 4.2%, 21.1%, and 74.7% of patients, respectively. Left main was involved in 9.8% and 14.4% had ejection fraction < 35%. The in-hospital mortality was 1.5%, mainly due to cardiac causes. This study indicates significant prevalence of major cardiovascular risk factors in Iranian CABG patients. In-hospital mortality of primary isolated CABG in Iran is similar to reported rates.

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Key words: Coronary artery bypass surgery, risk factor, in-hospital mortality

INTRODUCTION

Coronary artery bypass grafting (CABG) surgery has been the most intensely studied operation in the history of surgery (1). However, conducting studies of bypass surgery has been like aiming at a moving
CORONARY ARTERY BYPASS GRAFTING IN PATIENTS WITH LOW EJECTION FRACTION: THE EFFECT OF INTRA-AORTIC BALLOON PUMP INSERTION ON EARLY OUTCOME

SAEED DAVOODI, ABBASALI KARIMI, SEYED HOSSEIN AHMADI, MEHRAB MARZBAN, NAMVAR MOVAHEDI, KYOMARS ABBASI, ABBAS SALEHI OMRAIN, MAHMOOD SHIRZAD, MEHRDAD SHEIKHVATAN, SEYED HESAMEDDIN ABBASI

ABSTRACT

BACKGROUND: Survival benefit with intra-aortic balloon pump (IABP) insertion for coronary artery bypass grafting (CABG) patients with left ventricular dysfunction is controversial. The aim of this study was to assess the early results of CABG that predict 30-day mortality and prolonged length of hospital stay (LOS) after isolated CABG and the role of IABP application as a main predictor in patients with an ejection fraction (EF) of 30% or less. MATERIALS AND METHODS: Eight hundred and thirty-three patients who underwent isolated CABG with EF ≤ 30% were entered and compared with 10881 patients with EF > 30% as the control group. Demographic and clinical characteristics and postoperative complications were considered. Data were analyzed using the student’s t-test and chi-square test for univariate analysis and the analysis of covariance and logistic regression for multivariate analysis. RESULTS: The thirty-day mortality rate (1.6% vs. 0.7%, P < 0.001), the mean of LOS (P < 0.001), and the mean of the length of ICU stay (P < 0.001) were significantly higher in the severe left ventricular dysfunction group than in the control group. In patients with severe left ventricular dysfunction, the use of intra-aortic balloon pump was related to the 30-day mortality rate (P = 0.002) and prolonged LOS (P = 0.009). Also, urinary tract infection, prolonged ventilation, and renal failure as postoperative complications were statistically more in the group with the application of IABP. CONCLUSION: Low ejection fraction can positively affect thirty-day mortality and prolonged LOS and ICU stay in patients who undergo CABG. In these patients, IABP insertion is a strong predictor for early complication and mortality.

Key words: Coronary artery bypass grafting, intra-aortic balloon pump, left ventricular dysfunction, outcome

INTRODUCTION

Some randomized controlled trials showed a survival benefit with intra-aortic balloon pump (IABP) insertion for coronary artery bypass grafting (CABG) patients with low ejection
Early mortality predictors in coronary artery bypass grafting patients required intra-aortic balloon pump in perioperative and postoperative periods.


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AIM: The intra-aortic balloon pump (IABP) is commonly used for decreasing myocardial oxygen demand by systolic unloading in perioperative heart failure. The aim of this study was to determine perioperative prognostic factors for in-hospital mortality in coronary artery bypass grafting patients who received the intraaortic balloon pump. METHODS: A total of 271 patients who underwent coronary artery bypass grafting and received intra-aortic balloon pump perioperatively between January 2002 and September 2006 were studied. The preoperative, operative and postoperative risk factors for early death were evaluated. RESULTS: Early mortality rate in the study population was 17.3%. From variables entered into multivariate logistic regression the following parameters were identified as prognostic factors for early death: left main disease, diabetes, postoperative renal failure and cardiac arrest (P<0.05). The minor and major intra-aortic balloon pump related complications were not significant in univariate and multivariate analysis and its rate was 3.6%. CONCLUSION: According to our study the mortality of IABP group is low compared to other studies, as well as IABP-associated complications. Also it revealed that there is no correlation between IABP-associated complications and early mortality.

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Factors Affecting Postoperative Morbidity and Mortality in Isolated Coronary Artery Bypass Graft Surgery

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Abstract

Purpose. This study was conducted to investigate predictors of mortality before and after isolated coronary artery bypass grafting (CABG).

Methods. Single-institutional data on risk factors and mortality were collected for 8890 patients who underwent isolated CABG by the same group of surgeons. The relationship between risk factors and outcome was assessed using univariate and multivariate analyses in two risk models: a preoperative model (model 1) and then a pre-, intra-, and postoperative model (model 2).

Results. The mean age of the patients (25.4% women and 74.6% men) was 58.5 ± 9.7 years. Fifty-five (0.6%) patients died after surgery. Hypercholesterolemia was the most common comorbidity factor (61.1%), followed by hypertension, a smoking habit, recent myocardial infarction (MI) <21 days, and diabetes. Postoperative tamponade, graft occlusion, and MI (0.01%) were the least common complications. The patients spent 39.7 ± 33.9 h in the intensive care unit (ICU) postoperatively. Patients were followed up for a minimum of 30 days. The multivariate analysis of our preoperative risk model revealed that the best predictors of operative mortality were a history of diabetes, hypertension, the presence of angina, Canadian Cardiovascular Society Classification (CCS) of grade III or IV, ejection fraction (EF) ≤30%, three-vessel disease, and left main disease.

Conclusion. After surgery, and with the inclusion of all the pre-, intra-, and postoperative variables into model two, the following were revealed to be prognostic factors for in-hospital mortality: a history of diabetes, hypertension, the presence of angina, CCS grades III or IV, EF ≤30%, absence of internal mammary artery (IMA) use, prolonged cardiopulmonary bypass (CPB) time, and prolonged ICU stay.

Key words Cardiovascular disease · Coronary artery disease · Coronary artery bypass graft surgery · In-hospital mortality

Introduction

It is still difficult to predict the outcome of major cardiac surgery such as coronary artery bypass grafting (CABG). Tremendous efforts have been made to develop risk stratification models for a more accurate risk prediction of the mortality of patients undergoing CABG,1–3 which is now the most commonly performed major operation in the world. However, these risk models must be applied with caution and only after careful study and calibration for any specific population. The purpose of this study was to identify the preoperative, operative, and postoperative predictors of operative mortality in a series of Iranian patients who underwent isolated CABG at one referral center.

Patients and Methods

Data Source

We conducted a cross-sectional study of patients who underwent isolated CABG over a 4-year period at our center. The study population consisted of 8890 patients (2261 women and 6629 men) with a mean age of 58.5 ± 9.7 years (range, 21–88), who underwent isolated CABG between January 2002 and January 2006. The patients were allocated to one of two groups: Group A (case group) comprised 55 patients who died within the first 30 days of surgery and Group B comprised 8835 patients.
Hybrid endovascular procedure for high risk elderly patients

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Repair of aortic arch and the impact of cross-clamping time, New York Heart Association stage, circulatory arrest time, and age on operative outcome

An interestingly good result for aortic arch aneurysm repair [1]. Recently there are a few reports in the literature of hybrid surgical and endovascular aortic aneurysm repair as cerebral debranching and stenting of aortic arch with good results [2]. The main advantage of this procedure is avoidance of total circulatory arrest and deep hypothermia especially in elderly patients with major comorbidities. I personally have good experience with this technique and would like to know your opinion about considering this option for high risk elderly patients with high NYHA class or major comorbidities.

References

In-hospital and late clinical outcomes of direct stenting strategy versus stenting after predilatation for the treatment of coronary artery lesions.

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BACKGROUND: Direct stenting without balloon dilatation may reduce procedural costs and duration, and hypothetically, the restenosis rate. This study was designed to compare the in-hospital and long-term outcomes of direct stenting (DS) versus stenting after predilatation (PS) in our routine clinical practice. METHODS: One thousand six hundred and three patients treated with stenting for single coronary lesions were enrolled into a prospective registry. Patients with acute myocardial infarction (MI) within the preceding 48 hours, highly calcified lesions, total occlusions, or lesion in a saphenous graft were excluded. The baseline, angiographic, and procedural data, in-hospital outcomes and follow-up data were recorded in our database, and analyzed with appropriate statistical methods. RESULTS: Eight hundred and fifty-seven patients (53.5%) were treated with DS, whereas 746 of them (46.5%) underwent PS. In the DS group, lesions were shorter in length, larger in diameter, and had lower pre-procedural diameter stenosis. Type C and diffuse lesions and drug-eluting stents were less frequent (p < 0.001). In univariate analysis, dissection and non-Q-wave MI occurred less frequently in this group (0.2% and 0.6% vs 3.9% and 2.1%, p < 0.001 and p = 0.01, respectively). However, the cumulative major adverse cardiac events (MACE) did not differ significantly (4.9% vs 4.6%, p = 0.79). In multivariate analysis, direct stenting reduced the risk of dissection (OR = 0.07, 95% CI: 0.01-0.33), but, neither the cumulative endpoint of MACE (OR = 1.1, 95% CI = 0.58-2.11, p = 0.7) nor its constructing components were different between the groups. CONCLUSIONS: Direct stenting in real world has at least similar long-term outcomes with patients treated with stenting after predilatation and is associated with lower dissection rate.

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Myocardial infarction secondary to premature coronary artery disease as the initial major manifestation of systemic lupus erythematosus

SE KASSAIAN, H GOODARZYNEJAD, S DARABIAN, Z BASIRI

Summary
A 32-year-old woman admitted to the emergency department was diagnosed with acute anterior myocardial infarction, treated with thrombolytics and referred for angiography on the basis of her age. The patient was then referred for angioplasty with the diagnosis of an atherosclerotic lesion in the left anterior descending (LAD) coronary artery. Successful treatment of the lesion by primary stenting ensued. Laboratory findings revealed a state of hypercoagulability as well as some collagen fibre disease. The final diagnosis, confirmed by a rheumatologist, was systemic lupus erythematosus (SLE) with premature atherosclerosis of the LAD in addition to hypercoagulability.

A Medline search of the literature revealed limited previous reports of myocardial infarction due to premature coronary artery disease as the first manifestation in SLE.

The association between systemic lupus erythematosus (SLE) and acute myocardial infarction has been formerly described. The three major coronary abnormalities related to myocardial injury in SLE included premature atherosclerosis, coronary arteritis and, less commonly, coronary aeurysms. In SLE, premature atherosclerosis is thought to be caused by immune-mediated endothelial injury, hyperlipidaemia and hypertension. The hypertension may be related to steroid therapy. In a case-control study, Roman et al. found that increased prevalence of atherosclerosis was not attributable to traditional risk factors for cardiovascular disease. In addition, hypercoagulability resulting from the lupus anticoagulant is another potential mechanism for coronary thrombosis.

Coronary artery disease (CAD) due to atherosclerosis is seen in young people, particularly those with long-standing SLE, especially if they have been treated with corticosteroids. Herein, we report an atypical case of myocardial infarction in a young woman as the first major clinical demonstration of systemic lupus erythematosus.

Case report
A 32-year-old woman with no history of oral contraceptive use and no CAD risk factors was admitted to the emergency department with the diagnosis of myocardial infarction, and treated with streptokinase without any complications. Due to the occurrence of myocardial infarction in a young woman with no risk factors, a coronary angiogram was performed two weeks later. The coronary angiography report indicated a significant atherosclerotic lesion at the proximal portion of the left anterior descending (LAD) coronary artery (Fig. 1). Eight months later, the patient was referred for angioplasty as a result of persistent anginal pain, despite adequate medical treatment.

A stress 99mTc-MIBI myocardial SPECT scan showed a fixed defect in the antero-apical, anteroseptal and apex with partial viability. An echocardiogram was obtained that demonstrated no pericardial effusion or valvular heart disease. Treatment of premature atherosclerotic stenosis of the LAD commenced with the implantation of a 3 × 18 mm biodivysio stent, with a successful outcome (Fig. 2).

Evaluation for the presence of a hypercoagulable state was considered due to the occurrence of premature coronary artery disease (CAD) in a young woman with no risk factors. With further work up, protein C, protein S and antithrombin III levels

Fig 1. Recanalised significant LAD stenosis just after the first diagonal branch of the coronary tree.
Prevalence of left main coronary artery disease among patients with ischemic heart disease: insights from the Tehran Angiography Registry.


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AIM: This study was designed to investigate the prevalence of left main coronary artery (LMCA) significant stenosis among patients with stable angina (SA) or acute coronary syndromes (ACSs) and to assess the influence of demographic and clinical profiles on these findings. METHODS: A review of the Angiography Registry demonstrated that 18137 patients had SA or ACSs. The patients’ characteristics were compared in subgroups with and without LMCA disease. RESULTS: Significant and minimal LMCA stenoses were found in 659 (3.6%) and 1157 (6.4%) patients, respectively. An unprotected LMCA disease was estimated in 609 (3.4%) subjects. A cumulative Logit Model analysis revealed the male gender (odds ratio [OR]=1.480, 95% confidence interval [CI]=1.287 to 1.703; P<0.001), diabetes mellitus (OR=1.158, 95% CI=1.029 to 1.303; P=0.015), dyslipidemia (OR=1.125, 95% CI=1.001 to 1.265; P=0.048), and aging (OR=1.028, 95% CI=1.022 to 1.034; P<0.001) as the independent predictors of LMCA stenosis with coexistent diseases in the rest of the coronary arteries. In the patients with normal or minimal stenoses of the other coronary arteries, cigarette smoking (OR=3.749, 95% CI=1.698 to 8.070) was found to be the independent risk factor of isolated LMCA disease. Luminal stenosis >50% in the right coronary artery, the left circumflex artery, and the left anterior descending artery was significantly more frequent in association with LMCA disease. CONCLUSIONS: The patients with LMCA disease were more likely to be male, older, and have diabetes mellitus or dyslipidemia, whereas cigarette smoking was found as an independent predictor of isolated LMCA. There was a strong correlation between the severity of LMCA stenosis and coexistent diseases in the rest of the coronary arteries.

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Original Research

Under- and overreporting of energy in a group of candidates for CABG surgery and its association with some anthropometric and sociodemographic factors, Tehran, Iran

Introduction: Numerous studies have documented a high prevalence of misreporting energy intakes. This paper examines the prevalence of under- and overreporting of energy intake in a group of candidates for coronary artery bypass graft (CABG) surgery and its association with body mass index (BMI) and some sociodemographic factors.

Subjects and methods: Dietary assessment (using a food frequency questionnaire) and demographic evaluation of 449 CABG surgery candidates was performed. Weight and height was also measured. McCrory equation was used to identify inaccurate records of energy intake. With this equation, reporting energy intake less than 78% and more than 122% of predicted energy expenditure was considered as under- and overreporting, respectively.

Results: Less than half of the participants reported energy intakes within the plausible limits. There were more overreporters than underreporters in this sample. The only significant association between misreporting and related factors was seen in BMI groups. As BMI increased, the number of underreporters increased significantly. Expressed as a percentage of total energy, mean carbohydrate intake was significantly lower and mean fat and protein intake was significantly higher in underreporters compared to overreporters.

Conclusion: The high prevalence of misreporting suggests more research to examine the characteristics of misreporters. Calibrating data with these characteristics can help to improve intake estimates.

Keywords: underreporting, overreporting, energy intake, CABG candidates

Introduction

Numerous studies in industrialized countries have documented a high prevalence of underreporting energy intakes from 24-hour recalls, food records, and food-frequency questionnaires (FFQs) (Heitmann and Lissner 1995; Hirvonen et al 1997; Lafay et al 1997; Goris et al 2000; Krebs-Smith et al 2000). Many of these studies have shown that underreporting is not random, but is related to characteristics such as obesity, smoking, dieting, and psychological factors (Hebert et al 1995; Voss et al 1997; Braam et al 1998; Johansson et al 1998, 2001).

Most of these studies have been performed on a healthy population (Heitmann and Lissner 1995; Hebert et al 1995; Hirvonen et al 1997; Lafay et al 1997; Voss et al 1997; Braam et al 1998; Johansson et al 1998, 2001; Goris et al 2000; Krebs-Smith et al 2000), but it is clear that accurate evaluation of dietary intake is very important in some diseases such as cardiovascular problems where lifestyle, especially diet, has a great effect on their procedure. Therefore, coronary artery bypass graft (CABG) candidates were the study population.
Acquired Infrarenal Abdominal Aortic Coarctation: Treatment with Percutaneous Self Expandable Stent

H. Nough, M.A. Haji-Zeinali¹, Z. Ansari, H.R. Varastehravan, M. Emami, P. Mirmohamedi

Abstract
Abdominal aortic coarctation is an extremely rare vascular pathology. Its etiology can be congenital or acquired. Here we present a case of acquired infrarenal abdominal coarctation in a 66-year-old woman who complained of low back and legs pain. She had no signs of resting lower limb ischemia, with diminished distal pulses and normal blood pressure in upper and lower extremities. Magnetic resonance angiography of abdominal aorta, iliac and femoral arteries revealed local stenosis of abdominal aorta below the renal arteries (80% of luminal diameter). The length of coarctation was 3 cm. The patient was scheduled for percutaneous aortoplasty and stent implantation. Nintinol self-expandable stent was implanted. At 9 months clinical follow up no signs or symptoms of stenosis or diminished blood flow in lower extremities were found. Self-expandable stent is effective, easy to implant, and has good adaptation to the wall of aorta and can be considered in such cases successfully.

Keywords ● Aortic coarctation ● stent ● transluminal arterial dilatation ● abdominal

Introduction
Abdominal aortic coarctation (AAC) is an extremely rare vascular pathology. Its etiology can be congenital or acquired.¹ AAC was first described by Quain in 1848.² It comprises approximately 2% of all coarctations of aorta.¹³ The exact etiology of ACC is still controversial. Congenital, acquired, inflammatory, and infectious etiologies have been proposed.⁴

Multiple operative strategies have been described to manage AAC. Balloon angioplasty is an alternative treatment for AAC.¹ Usefulness of balloon and self-expanded stent implantation in the treatment of AAC is under evaluation.⁵ Many studies demonstrated the benefits of self-expandable stent such as feasibility, accurate implantation, low stent dislodgment or migration, and late remodeling in the treatment of aortic coarctation.⁶ In the present study we report a rare case of acquired infra renal artery coarctation that was treated with self-expanded stent.

Case Presentation
A 66-year-old woman with low back and exertional legs pain for two years referred from orthopedic clinic. The patient had...
Assessment of Myocardial Viability: Selection of Patients for Viability Study and Revascularization

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Abstract

The aim of this article is to review the application of current imaging techniques used for the detection of viable myocardium. Each technique is discussed briefly, and the more commonly used techniques are compared. The imaging techniques reviewed herein are dobutamine stress echocardiography, single photon emission tomography, magnetic resonance imaging, positron emission tomography with F-18 fluorodeoxyglucose, and recently introduced tissue Doppler imaging. The estimation of the amount of viable myocardium that could predict a better outcome after revascularization being a challenging issue, the present article also reviews a variety of cut-off points suggested by different investigators as adequate viable myocardium for revascularization and presents a summary of clinical, angiographical, and echocardiographic findings that could assist in selecting patients for viability study.

Keywords: Coronary artery disease • Myocardium • Dobutamine • Echocardiography, stress • Echocardiography, Doppler

Introduction

Viable myocardium can be defined as myocardium that shows severe hypokinesia or akinesia at resting echo which will improve in function after revascularization. Armstrong explained viability as recovery of function (either regional or global) and reduction in symptoms after revascularization. The term “viable” describes myocardial cells that are alive. A precise definition of this term is given by Underwood and colleagues, who carefully defined that this term, whether applied to a myocyte or to a segment of the myocardium, implies nothing with regard to contractile state. Thus, viable myocardium may contract normally or it may be dysfunctional, depending on other circumstances. The contractile dysfunction of viable myocardium may be seen in two syndromes: myocardial stunning and myocardial hibernation. Myocardial stunning results from a transient coronary occlusion followed by reperfusion and has been defined as reversible myocardial contractile dysfunction in the presence of normal resting myocardial blood flow. Myocardial hibernation refers to chronic ventricular dysfunction associated with severe coronary artery disease with complete or partial recovery of contractile function occurring after revascularization. Vanoverschelde et al. explained that in a subgroup of patients with non-infarcted collateral-dependent myocardium, immature or insufficiently developed collaterals do not provide adequate flow reserve. Despite nearly normal resting flow and oxygen consumption, these collateral-dependent segments exhibit chronically depressed wall motion and demonstrate marked ultrastructural alterations on morphological analysis. The authors proposed that these alterations are in consequence of repeated episodes of ischemia as opposed to chronic hypoperfusion and represent the flow, metabolic, and morphological correlates of myocardial "hibernation". The term "ischemic cardiomyopathy" is also used by many investigators to describe the condition of the myocardium damaged by severe coronary artery disease (CAD). This
Discrete Subvalvular Aortic Stenosis: Severity of Aortic Regurgitation and Rate of Recurrence at Midterm Follow-Up after Surgery

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Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Original Article

Abstract

Background: Discrete subaortic stenosis (DSS) is a progressive condition. Controversy still rumbles on as to whether the subaortic membrane causes aortic regurgitation (AR) and whether membrane resection reduces AR severity. We investigated the association between the left ventricular outflow tract peak gradient (LVOT-PG) and AR severity preoperatively and changes in AR severity and obstruction recurrence after surgery in DSS patients.

Methods: Twenty patients were evaluated before and after surgery for DSS (mean follow-up time: 13.60±9.61 months). The patients were evaluated via transthoracic echocardiography and transesophageal echocardiography, if necessary. The cut-off point for surgery was LVOT-PG ≥50 mmHg or the presence of progressive AR.

Results: The mean age of the patients was 28.55±15.23 years, and 35% of them were male. LVOT-PG decreased from a mean of 80.83±42.72 mmHg preoperatively to 19.14±14.03 mmHg postoperatively and to 25.47±16.10 at follow-up. AR was identified in 15 (75%) patients preoperatively: mild in 8 (40%) and moderate in 7 (35%). The postoperative change in AR severity was insignificant. The correlation between preoperative LVOT-PG and the incidence and severity of preoperative AR was not significant. AR severity had no correlation with age. Membrane recurrence occurred in 25% of the patients.

Conclusion: Our results indicated no relationship between AR severity and LVOT-PG and the patient’s age. Patient selection for surgery can, therefore, be carried out on the basis of LVOT-PG or AR severity separately. Subaortic resection may reduce AR severity in some patients, but this reduction is not significant. Future studies are required to elucidate whether or not the presence of the AR is an indication for surgery.

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Keywords: Discrete subaortic stenosis • Aortic valve insufficiency • Follow-up studies • Surgery

Introduction

Discrete subaortic stenosis (DSS) is more common in childhood, but it is also a relatively frequent heart disease in adult patients with a prevalence of 6.5% of all adult congenital heart diseases.1

Fixed subaortic stenosis is responsible for up to 20% of the left ventricular outflow tract (LVOT) obstructions requiring intervention.2 It generally occurs in one of two forms. The less common form is secondary to circumferential fibromuscular tunnels, but it more commonly results from a discrete membrane immediately below the aortic valve.3 Traditionally, it has been difficult to differentiate DSS from the valvular aortic stenosis; today, however, we may reliably determine a subaortic membrane masked by a hypertrophied and prominent ventricular septum using...
Do C-Reactive Protein and Lipoprotein (a) Have Different Impacts on the Severity of Coronary Artery Disease in Diabetic and Non-Diabetic Patients?

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Received 25 January 2008; Accepted 29 March 2008

Abstract

Background: The potential role of lipoprotein (a) changes and also inflammation in coronary artery disease (CAD) have rendered these processes one of the most interesting objects of study in patients affected by type 2 diabetes mellitus. The aim of the current study was to evaluate lipoprotein (a) and other lipid profiles and also C-reactive protein (CRP) as the predictors of cardiovascular disease severity in non-insulin dependent diabetic subjects in comparison with non-diabetic CAD patients.

Methods: Between June and September 2004, 372 patients with CAD were enrolled at Tehran Heart Center. Non-insulin dependent diabetics accounted for 102 of the cases, and the remaining 270 were non-diabetics. The severity of CAD was evaluated using the Gensini score, and the effect of patient variables such as serum lipid concentrations and CRP on CAD severity in the diabetics was investigated and compared with that of the non-diabetics.

Results: The mean of the Gensini score, CRP, and serum concentrations of all the lipid profiles were similar between the diabetic and non-diabetic patients. In the diabetic group, a high CRP concentration (β=0.200, Rs= 0.040; P=0.046) was effective on the Gensini score, whereas lipoprotein (a) and lipid profiles did not influence CAD severity. In the non-diabetics, no significant relationships were found between the Gensini score and all the studied laboratory indices.

Conclusion: A high CRP level is an important predictor of the severity of CAD in diabetic patients with CAD.

Keywords: Diabetes mellitus • Coronary artery disease • Lipoprotein(a) • Inflammation

Introduction

Several studies have shown that the incidence of coronary artery disease (CAD) related to atheroma in patients with type 2 diabetes mellitus is higher than that of the general population and is accompanied with an increased total mortality rate.1,2 The greater mortality in these patients cannot be explained only by the presence of the classic risk factors
EARLY OUTCOME OF CONCURRENT MITRAL VALVE REPLACEMENT AND CORONARY ARTERY BYPASS GRAFTING

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Abstract- Concomitant coronary artery bypass surgery (CABG) in patients undergoing mitral valve replacement (MVR) has been shown to be an important risk factor for hospital mortality. We evaluated preoperative characteristics, postoperative complications, in-hospital mortality rate, and length of stay in hospital for patients undergoing concurrent CABG with MVR. Preoperative and postoperative clinical data from 175 patients undergoing concurrent CABG with MVR operation at Tehran Heart Center from 2002 through 2006 were collected and entered into a database. Information was obtained by clinical and case note review as well as detailed questionnaires to physicians and patients. Mean age of patients was 57.95 ± 10.54 years and 51.4% were male. Mean New York Heart Association (NYHA) score was 2.46 ± 0.84. Among studied patients, 18.3% and 2.9% underwent aortic and tricuspid valve replacement, respectively. In-hospital mortality was 6.9% and 96.0% of patients were hospitalized ±14 days. History of congestive heart failure (P = 0.027) and postoperative brain stroke (P = 0.004) were independent predictors for in-hospital mortality. Exact considering of congestive heart failure and postoperative brain stroke related to in-hospital mortality in concurrent CABG with MVR operation are necessary.

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Key word: Coronary artery bypass grafting, mitral valve replacement, outcome, in-hospital mortality

INTRODUCTION

Patients who have both mitral valve dysfunction and atherosclerotic coronary artery disease (CAD) form a heterogeneous group in terms of origin of the valvular disease, extent of coronary atherosclerosis, left ventricular function, and hemodynamic status at operation (1). In recent years, 15% to 30% of patients undergoing mitral valve replacement (MVR) or mitral valve repair for non-ischemic mitral valve disease have significant CAD (2). Predictors of early mortality associated with combined coronary artery bypass grafting (CABG) and mitral valve placement include the need for replacement versus repair (in some but not all series); however, they may include other variables such as age, co-morbid conditions, the urgency of surgery, and left ventricular function (3).

The combination of MVR with CABG is generally considered to have a greater early and late mortality than either procedure alone. CAD is often
Effect of Cardiac Rehabilitation Program on Heart Rate Recovery after Percutaneous Coronary Intervention and Coronary Artery Bypass Grafting

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Received 13 July 2007; Accepted 25 October 2007

Abstract

**Background:** The objective of this study was to evaluate the effect of a hospital-based cardiac rehabilitation program on heart rate recovery (HRR) in patients who received percutaneous coronary intervention (PCI) or coronary artery bypass grafting (CABG).

**Methods:** Two hundred forty patients, who completed 24 sessions of a cardiac rehabilitation program (phase 2) after PCI (n=62) or CABG (n=178) at the rehabilitation department of Tehran Heart Center were included in the present study. Demographic and clinical characteristics and exercise capacity at baseline and at follow-up were compared between the two groups. The main outcome measurements were: Resting heart rate, peak heart rate, and HRR.

**Results:** All the patients showed significant improvements in heart rate parameters from the baseline to the last sessions. The profile of atherosclerotic risk factors (except for diabetes mellitus) was similar between the PCI and CABG subjects. After eight weeks of cardiac rehabilitation, HRR increased averagely about 17 and 21 bpm among the CABG and PCI patients, respectively (p=0.019).

**Conclusion:** The results of the present study were indicative of an increase in HRR over 1 minute in patients irrespective of their initial revascularization modality (i.e. PCI or CABG) after the completion of cardiac rehabilitation. Be that as it may, the PCI patients achieved greater improvement in HRR by comparison with the CABG patients.

**Keywords:** Heart rate • Rehabilitation • Percutaneous coronary intervention • Coronary artery bypass grafting

Introduction

Cardiac rehabilitation is a well-established treatment in patients with coronary artery disease. Meta-analysis of pooled data from clinical trials and cohort studies has demonstrated significant reductions in all-cause and cardiovascular mortality of patients enrolled in cardiac rehabilitation programs. It has been shown that exercise training modifies

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INTRODUCTION
Cardiac rehabilitation is a well-established treatment for patients with coronary artery disease. Meta-analysis of pooled data from clinical trials and cohort studies demonstrated significant reductions in all-cause and cardiovascular mortality in patients enrolled in exercise-based cardiac rehabilitation programs.1–4 Although the precise mechanism by which exercise reduces the mortality rate is unclear, it has been shown that exercise training modifies the autonomic control of cardiovascular function. An early fall in heart rate (HR) after exercise is thought to result from increased vagal activity. Recently, HR recovery was demonstrated to be a powerful predictor of all-cause mortality.5,6 Cardiac rehabilitation has also been associated with an improvement in HR recovery in patients with heart failure, coronary artery bypass grafts, or prior myocardial infarction.7–10 However, no cohort evaluation of the effects of cardiac rehabilitation in patients with percutaneous transluminal coronary angioplasty (PTCA) has been carried out. The purpose of this study was to evaluate the effects of an exercise-based cardiac rehabilitation program on HR recovery after PTCA to clarify whether exercise training could result in better HR recovery.

PATIENTS AND METHODS
Our study population was drawn from a large cohort of 436 patients (mean age, 55.96 ± 11.10 years; males, 71.8%) who had undergone PTCA at Tehran Heart Center between July 2004 and January 2006 and were enrolled in an exercise-based cardiac rehabilitation program (phase II). The charts of all patients who attended a session of cardiac rehabilitation were reviewed. The investigation was approved by the institutional review board governing the participation of human subjects in research at the Tehran University of Medical Sciences. It also conformed with the principles outlined in the Declaration of Helsinki. The inclusion criteria were: no previous coronary artery bypass surgery; no neurologic impairment (stroke, peripheral neuropathy, or traumatic brain injury); no severe musculoskeletal disease (fracture, amputation); and no complications during hospitalization, such as severe infection, shock, arrhythmia, or prolonged ventilator dependence. Patients were excluded if they displayed uncontrolled dysrhythmia during exercise training, such as atrial flutter, fibrillation, or continuous ventricular tachycardia, or if ischemic changes were observed on an electrocardiogram during treadmill exercise. Heart rate recovery was defined as the difference between the HR at the end of exercise and HR 1 minute after cessation of exercise.
Efficacy of Two Streptokinase Formulations in Acute Myocardial Infarction: A Double-Blind Randomized Clinical Trial

Mojtaba Salarifar, MD*, Saeed Sadeghian, MD, Ali Abbasi, MD, Gholamreza Davoodi, MD, Alireza Amirzadegan, MD, Seyed Kianoosh Hosseini, MD, Navid Paydari, MD, Aida Biria, MD, Parisa Moemeni, MD

Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Background: We sought to evaluate the efficacy and safety of the different trade forms of streptokinase available in our country, namely Heberkinasa (Heberbiotec, Havana, Cuba) and Streptase (Aventis Behring GmbH, Marburg, Germany).

Methods: We conducted a double-blind randomized clinical trial to compare the two streptokinase formulations, i.e. Heberkinasa (HBK) or Streptase (STP), in patients with acute myocardial infarction who needed thrombolysis. Thrombolysis success was evaluated angiographically and/or clinically. Clinical follow-up was done 30 days after thrombolysis.

Results: We randomly allocated 221 patients with a mean age of 56.9±10.8 years (males: 88.2%) to HBK (n=119) and STP (n=102) groups. Baseline clinical and demographic characteristics were similar between the two groups, and the two groups were not significantly different in terms of door-to-needle and pain-to-needle intervals. The rate of complications was not significantly different between the groups (44.1% [HBK] vs. 42% [STP]). Angiography was done for 158 (71.5 %) patients in the first 24 hours (9%) and in the first 72 hours (38.8%) after thrombolysis. Lesion morphology and lesion/patient ratio were not significantly different between the two groups (1.87[HBK] vs. 1.67[STP]). The two groups were similar with respect to angiographic patency rate (67.5% [HBK] vs. 67.6% [STP]). The study groups were also similar as regards clinical outcome and complications of both streptokinase formulations.

Conclusion: The present study demonstrated that Heberkinasa is as effective and as safe as a standard streptokinase, namely Streptase, in a clinical setting.

J Teh Univ Heart Ctr 1 (2009) 29-34

Keywords: Streptokinase • Thrombolytic therapy • Myocardial infarction

Introduction

Increasing affluence in the developing countries has ushered in soaring rates of coronary heart disease and death from acute myocardial infarction necessitating increases in treatment, mainly with thrombolysis and primary percutaneous coronary intervention. In fact, tackling coronary artery disease has become a strategic priority for the World Health Organization. Currently, thrombolytics such as streptokinase are the leading agents for the treatment of acute myocardial infarction. Streptokinase is now produced in many countries worldwide. Furthermore, approximately
How to "Watch the Sac" after Endovascular Aortic Repair

Mehrab Marzban, MD*, Ali Mohammad Haji Zeinali, MD

Introduction

Since its first introduction in clinical practice in 1991, the endovascular repair of the abdominal aortic aneurysm (AAA) has been widely performed and is reported to be an effective alternative to conventional open surgery, especially for patients with medical comorbidities.1-3

The number of patients considered suitable for the endovascular repair of either thoracic or abdominal aortic aneurysm is on the increase currently,4 and this is mainly due to the availability of a newer generation of devices with fewer complications and better applicability. On the other hand, patients are increasingly requesting this procedure as they and also physicians find the minimally invasive nature of the treatment attractive.

Endovascular aneurysm repair (EVAR) is based upon the hypothesis that the exclusion of the AAA sac from arterial pressure will prevent AAA rupture.5 EVAR is, therefore, deemed successful when the device permanently excludes the aneurysm sac from arterial pressure. Endoleaks refer to the persistent perfusion of the aneurysm sac after EVAR and affect 15% to 21% of patients.6-12

The rise in the number of patients treated by endovascular teams and the resultant experience have led to periprocedural complications and primary anchorage problems with type 1 endoleaks becoming more and more infrequent. Types 1 and 3 endoleaks both give rise to a persistent blood flow into the aneurysm sac at high pressure, causing rapid aneurysm expansion and potential rupture. Type 4 endoleaks are mainly due to the porosity of the graft material in stent-grafts and nowadays are rare with the current devices. Type 2 endoleaks are usually low-pressure leaks into the aneurysmal sac secondary to retrograde filling by branching vessels like the lumbar arteries in abdominal aneurysms and most often have a benign course, with only a few of them requiring secondary intervention. Zarins et al. estimated the incidence of Type 2 endoleaks following EVAR at 10% to 20%.13

Although endoleaks are the major concern in endovascular treatment, there are other potential complications such as graft migration, graft fracture or fatigue, endograft stenosis, and kinking, which may become troublesome.

Because a favorable clinical outcome depends on the reliable detection of such complications, the choice of the right imaging method for follow-up is crucial. However, published data for different methods vary greatly in terms of detection rates.14-19 Follow-up examinations are advised by the European Collaborating Group on Stent-Graft Techniques for Abdominal Aortic Aneurysm Repair (EUROSTAR) at 1, 3, 6, 12, 18, and 24 months and yearly thereafter. Different follow-up protocols are used by different endovascular teams or hospitals, but all of them agree on the crucial role of this surveillance.

What imaging mode should be chosen in the immediate, mid-term and long-term follow-up of patients with an endoprosthesis? Multislice CT scan, magnetic resonance imaging (MRI), duplex ultrasonography (US), sac pressure measurement, and even plain radiography are used for this purpose.

CT scan

In many centers, CT scan is the imaging modality of choice for surveillance, and currently the follow-up protocol recommended by most manufacturers is based upon it. The combination of speed, reproducibility, and spatial and contrast resolution have made this the preferred method of imaging follow-up, despite the associated radiation dose and the potential for nephrotoxicity.20

The clinical performance of CT angiography in aneurysm imaging is well established, with documented utility in both the thoracic and abdominal aortas. The high-resolution data sets allow the reconstruction of thin transverse sections,
Impact of Diabetes Mellitus on Peripheral Vascular Disease Concomitant with Coronary Artery Disease

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Original Article

Background: The aim of this study was to evaluate the impact of diabetes mellitus (DM) on peripheral vascular disease (PVD) in patients with coronary artery disease (CAD).

Methods: A total of 13702 consecutive patients who underwent coronary artery bypass grafting (CABG) at Tehran Heart Center between January 2002 and March 2007 were included in this study. The demographic data, PVD, and outcome of these patients were reviewed. CABG patients before surgery were detected for PVD (stenosis ≥70% in the abdominal aorta; renal, carotid, and iliac arteries; or any other peripheral vascular system) with physical examination and past medical history. The suspected cases of PVD were, thereafter, confirmed via Doppler sonography or invasive angiography.

Results: This study recruited 4344 diabetic patients (mean age 59.30±8.7 years) and 9358 non-diabetic patients (mean age 58.42±9.9 years). The diabetics were significantly older and had a higher incidence of PVD (2.7% vs. 1.8%), female gender, hypertension, renal failure, smoking, and dyslipidemia than the non-diabetics (P<0.05). There was no significant difference between the two groups with regard to family history and left main disease. Also, the mean ejection fraction (EF) was 48.85%±10.4 and 49.35%±10. In the patients with and without DM, respectively; and the difference was significant (P=0.008). The in-hospital mortality rate (mortality over a 30-day post-operative period) was 1.8% in the diabetics and 0.7% in the non-diabetics (P<0.001). In the multivariate analysis, PVD, left main disease, age, female gender, and EF were significant in the development of mortality amongst the diabetic patients with a respective odds ratio of 4.17, 5.54, 1.03, 2.86, and 0.95 (P≤0.050). In the multivariate logistic regression analysis, PVD was significantly higher in the diabetics than in those without DM (OR=1.283, 95% CI: 1.001- 1.644; P=0.049). In the diabetic patients, carotid (1.13% vs. 0.83%), subclavian (0.05% vs. 0.02%), femoral (0.18% vs. 0.09%), renal (0.62% vs. 0.25%), and tibialis (0.16% vs. 0.06%) arteries had a higher incidence of stenosis than those in the non-diabetics.

Conclusion: We conclude that in diabetic patients with concomitant CAD, special attention must be directed towards the diagnosis of PVD using physical examination, Doppler sonography; and where needed, CT-angiography or invasive angiography. Also, in risk assessment, the presence of PVD should be strongly considered for CAD patients.

J Teh Univ Heart Ctr 1 (2009) 39-43

Abstract

Background: The aim of this study was to evaluate the impact of diabetes mellitus (DM) on peripheral vascular disease (PVD) in patients with coronary artery disease (CAD).

Methods: A total of 13702 consecutive patients who underwent coronary artery bypass grafting (CABG) at Tehran Heart Center between January 2002 and March 2007 were included in this study. The demographic data, PVD, and outcome of these patients were reviewed. CABG patients before surgery were detected for PVD (stenosis ≥70% in the abdominal aorta; renal, carotid, and iliac arteries; or any other peripheral vascular system) with physical examination and past medical history. The suspected cases of PVD were, thereafter, confirmed via Doppler sonography or invasive angiography.

Results: This study recruited 4344 diabetic patients (mean age 59.30±8.7 years) and 9358 non-diabetic patients (mean age 58.42±9.9 years). The diabetics were significantly older and had a higher incidence of PVD (2.7% vs. 1.8%), female gender, hypertension, renal failure, smoking, and dyslipidemia than the non-diabetics (P<0.05). There was no significant difference between the two groups with regard to family history and left main disease. Also, the mean ejection fraction (EF) was 48.85%±10.4 and 49.35%±10. In the patients with and without DM, respectively; and the difference was significant (P=0.008). The in-hospital mortality rate (mortality over a 30-day post-operative period) was 1.8% in the diabetics and 0.7% in the non-diabetics (P<0.001). In the multivariate analysis, PVD, left main disease, age, female gender, and EF were significant in the development of mortality amongst the diabetic patients with a respective odds ratio of 4.17, 5.54, 1.03, 2.86, and 0.95 (P≤0.050). In the multivariate logistic regression analysis, PVD was significantly higher in the diabetics than in those without DM (OR=1.283, 95% CI: 1.001- 1.644; P=0.049). In the diabetic patients, carotid (1.13% vs. 0.83%), subclavian (0.05% vs. 0.02%), femoral (0.18% vs. 0.09%), renal (0.62% vs. 0.25%), and tibialis (0.16% vs. 0.06%) arteries had a higher incidence of stenosis than those in the non-diabetics.

Conclusion: We conclude that in diabetic patients with concomitant CAD, special attention must be directed towards the diagnosis of PVD using physical examination, Doppler sonography; and where needed, CT-angiography or invasive angiography. Also, in risk assessment, the presence of PVD should be strongly considered for CAD patients.

J Teh Univ Heart Ctr 1 (2009) 39-43

Keywords: Diabetes mellitus • Peripheral vascular disease • Coronary artery disease

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Prosthetic Valve Endocarditis: Early Outcome following Medical or Surgical Treatment

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Abstract

Background: Prosthetic valve endocarditis (PVE) is an important cause of morbidity and mortality associated with heart valve replacement surgery. The aim of the present study was to describe the early outcome of treatment in patients with PVE in a single center.

Methods: The data of all the episodes of PVE registered at our institution between 2002 and 2007 were collected and analyzed retrospectively. The patients were assessed using clinical criteria defined by Durack and colleagues (Duke criteria). The analysis included a detailed study of hospital records. The continuous variables were expressed as mean±standard deviation, and the discrete variables were presented as percentages.

Results: Thirteen patients with PVE were diagnosed and treated at our center during the study period. In all the cases, mechanical prostheses were utilized. The patients’ mean age was 46.9±12.8 years. Women made up 53.8% of all the cases. Early PVE was detected in 6 (46.2%) patients, and late PVE occurred in 7 (53.8%). Eleven (84.6%) patients were treated with intravenous antimicrobial therapy, and the other two (15.4%) required surgical removal and replacement of the infected prosthesis in addition to antibiotic therapy. Blood cultures became positive in 46.2% of the patients. Mortality rate was 15.4% (2 patients).

Conclusion: It seems that in selected cases with PVE, i.e. in those who remain clinically stable and respond well to antimicrobial therapy, a cure could be achieved by antimicrobial treatment alone with acceptable morbidity and mortality risk.

J Teh Univ Heart Ctr 4 (2008) 205-208

Keywords: Endocarditis • Heart valves • Heart valve prosthesis • Anti-bacterial agents

Introduction

Prosthetic valve endocarditis (PVE) remains a serious complication of cardiac valve replacement despite improvements in prostheses types, surgical techniques, and infection control measures. PVE is an endovascular, microbial infection occurring on parts of the valve prosthesis or on reconstructed native heart valves.1 PVE occurs in 3% to 6% of recipients of substitute valves. Infection is generally categorized into early (usually less than 60 days postoperative) and late (greater than 60 days post-implantation).2 The risk of infection of the prosthetic material shows a bimodal distribution pattern, with an early peak during the first 6 postoperative weeks and likelihood of approximately 3%
Quality of Life in Coronary Artery Disease: SF-36 Compared to WHOQOL-BREF

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Received 15 October 2007; Accepted 10 December 2007

Abstract

Background: The Short Form Health Survey (SF-36) and WHO Quality of Life-BREF (WHOQOL-BREF) questionnaires are two common tools to assess changes in quality of life (QOL) over the course of treatment, especially in patients with coronary artery disease (CAD). However, the value of these two instruments among CAD patients has not been studied and compared. The objective of the present study was; therefore, to compare the SF-36 with the WHOQOL-BREF in these patients.

Methods: Between May and September 2006, patients with a final diagnosis of CAD who were candidates for isolated coronary artery bypass grafting (CABG) and hospitalized in Tehran Heart Center were randomly divided into two groups of 268 patients (for assessment of QOL with the SF-36) and 275 patients (for assessment of QOL with the WHOQOL-BREF). The correlations between the WHOQOL-BREF domains and SF-36 subscales, in addition to those between the SF-36 components summary scores and WHOQOL-BREF domains, were examined with Pearson’s correlation coefficients.

Results: The correlations between the physical, psychological, and social domains of the WHOQOL-BREF and physical functioning, mental health, and social functioning of the SF-36 were weak with Pearson’s correlation coefficients of 0.015, -0.036, and 0.042, respectively (r<0.3). There were also poor correlations between the physical component summary of the SF-36 and physical domain of the WHOQOL-BREF (r=0.001), and between the mental component summary of the SF-36 and mental domain of the WHOQOL-BREF (r=-0.082).

Conclusion: The correlation between the two questionnaires of the SF-36 and WHOQOL-BREF in the evaluation of QOL in CAD patients is weak.

Keywords: Quality of life • Coronary artery disease • Iran

Introduction

In clinical practice, quality of life (QOL) assessments will assist clinicians in making judgments about the areas in which a patient is most affected by disease and in making treatment decisions. In most countries, treatments aimed at improving QOL through palliative care, for example, can be both effective and inexpensive.1 Several instruments are available to assess changes in QOL over the course of treatment, especially in patients with coronary artery disease (CAD). The Short Form Health Survey (SF-36) questionnaire is one of the most widely generic
Repair Versus Replacement for Ischemic Mitral Regurgitation

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Received 27 September 2007; Accepted 19 January 2008

Abstract

Background: This study was undertaken to compare the outcome in patients with moderate to severe ischemic mitral regurgitation (IMR) undergoing coronary artery bypass grafting (CABG) with either mitral valve repair or mitral valve replacement.

Methods: Between March 2002 and February 2005, 49 consecutive patients (mean age: 62.84±8.42 years; mean EuroSCORE: 10.03±3.12) with coronary artery disease and moderate to severe IMR underwent CABG plus mitral valve replacement or mitral valve repair. The patients with annulus dilatation were more likely to undergo repair. The mean follow-up period was 18.89±2.1 months.

Results: 40.8% of the patients underwent CABG plus mitral valve replacement, and 59.2% had CABG concomitant with mitral valve repair. The total rate of mortality in our population was 14.9% (7 patients) including 10.3% (3 patients) early mortalities; all the deceased patients were in the repair group. Both groups had a similar EuroSCORE, but more patients in the repair group had a recent episode of unstable angina (65.5% vs. 35.0%, respectively; P=0.035) and diabetes mellitus (44.8% vs. 10.0%, respectively; P=0.009). After the follow-up period, in the repair group, 11.5% had no features of Mitral regurgitation (MR); while 50% had mild MR, 23.1% moderate MR, 11.5% moderately severe MR, and 3.8% severe MR. Overall, 68.9% had no or mild MR, which we defined as successful repair, and 31.1% had moderate to severe MR. Success of repair and mortality were not statistically related to preoperative ejection fraction (39.2±7.8% vs. 32.5±8.5%; P=0.057).

Conclusion: Early mortality was higher in the repair group than that in the replacement group, but this may have been due to the higher frequency of diabetes mellitus and unstable angina in the former group. Future studies are required to determine the benefit of repair versus replacement concomitant with CABG in IMR patients.

Keywords: Mitral regurgitation • Ischemia • Heart valve

Introduction

In moderate to severe ischemic mitral regurgitation (IMR), the use of mitral valve repair versus mitral valve replacement along with coronary artery bypass grafting (CABG) is controversial. Patients undergoing mitral valve repair may have a reduced incidence of thromboembolism and reduced necessity for anticoagulation compared with patients undergoing mitral valve replacement.1 Other advantages of mitral valve repair over replacement include greater freedom from endocarditis and better preservation of left ventricular function.2 These advantages have been investigated when degenerative mitral valve disease exists in isolation. The use of mitral valve repair in ischemic mitral regurgitation (IMR) is, however, controversial. IMR is a disease of myocardium,3 and while some authors believe that myocardial infarction...
Short-Term Outcome of Endovascular Repair of Aortic Aneurysms with Stent Grafts: Initial Results of the First Consecutive Series of Endovascular Aortic Repair in Iran

Ali Mohammad Haji Zeinali MD,* Mehrab Marzban MD, Mohammad Reza Zafarghandi MD, Mahmoud Shirzad MD, Shapoor Shirani MD, Mohamad Alidoosty MD, Mojtaba Salarifar MD, Ebrahim Nematipour MD, Hamidreza Poorhoseini MD, Ebrahim Kasaian MD, Davood Kazemi Saleh MD, Babak Haghighat MD, and Mansour Arafat MD

Abstract

Background- Endovascular aortic repair (EVAR), as a new and less invasive method for treatment of aortic aneurysms, has shown lower short term complications than routine open surgical repairs. In this report we present our results with the first consecutive series of this technique in our patients.

Methods- From Dec. 2006, we began a prospective case series of EVAR patients for the first time in Iran, and so far, 15 consecutive patients (1 female, 14 male) with the mean age of 66 years (range 36 to 89 years old) underwent endovascular aortic aneurysm repair (3 thoracic, 11 abdominal, 1 combined thoracic and abdominal) with Medtronic “Talent” or “Valiant” stent grafts. In-hospital and one month follow up results are reported as short-term outcome.

Results- All 12 abdominal aorta aneurysms (AAA) were infrarenal with an acceptable proximal neck. In eight patients, associated iliac aneurysms were seen. For 11 AAA patients, routine modular stent grafts were used and in one case, unilateral stent graft was implanted because of difficulty of contralateral stent graft implantation. Four thoracic aorta aneurysms (TAA) were repaired with Valiant stent grafts. One of them was a Marfan patient with recent Bentall surgery and two were post-surgery saccular aneurysms. In all 15 cases, stent graft implantation was done successfully. In five cases, mild type II endoleak was seen at the end of the procedure, which was no longer present on one month follow up. One patient had post- procedure cerebral stroke with delayed mortality. No other major complications were seen in 1 month follow up in the other 14 cases. Minor complications like vascular access hematoma, anemia and increased creatinine were controlled on hospital stay period in some cases. Control CT angiography in some patients revealed no endoleak or aneurysm enlargement and 6 and 12-month follow up assessment will be done for mid-term results.

Conclusion- Endovascular repair of aortic aneurysm is feasible and safe for suitable cases based on both clinical and radiologic findings. Good case selection, good device selection and suitable follow up are the keys for success of EVAR (Iranian Heart Journal 2008; 9 (1): 6-13).

Key words: aortic aneurysm ■ endovascular repair■ stent-graft ■ EVAR

From 1991 when Parodi et al. successfully treated an abdominal aortic aneurysm (AAA) with a stent graft for the first time,1 endovascular repair of aneurysm (EVAR) has rapidly developed. The incidence of AAA is 21 per 100,000 and
Significant Improvement in Severely Stunned Left Ventricle after Percutaneous Coronary Intervention

Ahmad Sharafi, MD, Seyed Ebrahim Kassaian, MD*, Ahmad Yamini Sharif, MD, Hakime Sadeghian, MD, Gholamreza Davoodi, MD, Abbas Soleimani, MD

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Received 23 February 2008; Accepted 10 April 2008

Abstract

This is a case of severely stunned left ventricle which occurred after a non-ST elevation myocardial infarction in a 76-year-old woman who was a known case of three-vessel disease. Her symptoms and cardiac function responded well to revascularization.

J Teh Univ Heart Ctr 3 (2008) 173-175

Keywords: Myocardial stunning • Angioplasty • Ventricular dysfunction

Introduction

For many years, the functional sequelae of chronic coronary artery disease were considered irreversible; evidence gathered over the past three decades, however, proves that this is not necessarily true.1 Cardiovascular research has led to the identification of three new and important phenomena: myocardial stunning, myocardial hibernation, and ischemic preconditioning. Myocardial stunning is characterized by transient contractile dysfunction that persists after reperfusion despite the absence of irreversible damage and despite restoration of normal or near normal coronary blood flow. Myocardial hibernation is a condition of sustained reduction of contractile function in hypoperfused but viable myocardium, which recovers completely upon reperfusion. Ischemic preconditioning refers to a phenomenon by which one or more brief periods of myocardial ischemia increases the ischemic tolerance against infarction by endogenous adaptive mechanisms.2 A number of studies, including non-randomized studies, have demonstrated that patients with post-ischemic heart failure may derive symptomatic and prognostic benefit from coronary revascularization, and most of this benefit is thought to be derived from the functional improvement of the hibernating myocardium.1,3

Case report

On 27 Oct. 2003, a 75-year-old woman referred to the emergency ward of our hospital for an evaluation of palpitation and chest pain. She was a case of three-vessel disease. A coronary angiography, performed three years previously, had made her a candidate for coronary artery bypass grafting (CABG) but she had refused to undergo surgery. A physical examination revealed rales on pulmonary auscultation and no cardiac murmur. In addition, S4 was...
Surgical Treatment of Atrial Fibrillation

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Abstract

Atrial fibrillation is the most prevalent permanent arrhythmia. It may be associated with other cardiac pathologies which need surgical treatment. Various types of surgery including the traditional cut-sew operations and operations using different energy sources are currently in use. In comparison with medical treatment, surgery is safe, effective, and has reliable results.

J Teh Univ Heart Ctr 4 (2008) 191-196

Keywords: Atrial fibrillation • Ablation, techniques • Surgery

Introduction

Atrial fibrillation (AF) is the most common cardiac arrhythmia. It is estimated to occur in 3% of the general population, and its likelihood increases significantly in the elderly (Table 1). Far from being a harmless arrhythmia, AF may beget major complications or even mortality.1-3

Table 1. Number of cases with atrial fibrillation per 100 persons (examined in the Framingham study)

<table>
<thead>
<tr>
<th>Age groups (y)</th>
<th>Persons with atrial fibrillation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50-59</td>
<td>0.5</td>
</tr>
<tr>
<td>60-69</td>
<td>1.8</td>
</tr>
<tr>
<td>70-79</td>
<td>4.8</td>
</tr>
<tr>
<td>80-89</td>
<td>8.8</td>
</tr>
</tbody>
</table>

AF may cause:
1. Palpitation, which leads to anxiety and discomfort.
2. Decreased ventricular function due to the loss of atrioventricular synchrony and, in its extreme, heart failure.
3. Thrombus formation in consequence of the stasis of the blood in the left atrium.
4. Risk of systemic thromboemboli.

According to the Framingham Heart Study,1 AF increases the odds ratio for death 1.5 to 1.9 times and the risk of embolic cerebrovascular accidents up to five times. The pharmacotherapy of AF has proved disappointing because of:
1. Failure to reverse arrhythmia to normal sinus rhythm in the majority of cases
2. Significant side effects of drugs
3. Need to long-term or even lifelong use of drugs
4. Exorbitant costs
5. Poor patient compliance

The AFFIRM Study (the Atrial Fibrillation Follow-up Investigation of Rhythm Management) showed that rhythm control in comparison to rate control offered no mortality benefits. Given the limitations of drug treatment for AF,

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خلاصه مقالات ارائه شده در کنگره های بین المللی و داخلی
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Teheran Heart Center
Presented Abstracts
2008 - 2009
A Survey of Trans-fatty Acids Intake in Coronary Artery Bypass Grafting Candidates in Iran

Seyedkhoei N, ataie-fafari A, Najfi M, Hosseini S
Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Objective: High consumption of trans fatty acids (TFAs) increases the risk of cardiovascular disease. We assessed the intake of industrial TFAs among a group of coronary artery bypass grafting (CABG) candidates during one year before surgery.

Methods: This was a cross-sectional study on 461 CABG candidates hospitalized at Tehran heart center. Dietary data were collected using a 138-item semi-quantitative food frequency questionnaire (FFQ). Participants were asked to report the amount of each food item they had consumed during the previous year which then converted to a daily intake. TFAs intakes were calculated according to the hydrogenated oils used for cooking in homes and margarine consumption.

Results: Mean total fat intake contributed 27.0% of daily energy intake. The mean hydrogenated oils used for cooking in homes were 7.9±12.5 and 0.8±3.8 g/day respectively according to the previous studies in Iran. TRAs account for approximately 33% in hydrogenated oils and 24% in margarine. From these TRA intake could be calculated as 2.2 g/day among these patients while the countryside survey demonstrated an average per-person intake 12.3 g/day of trans fatty acids.

Conclusion: According to the results of this study, dietary practice is probably appropriate in CABG surgery candidates. We suggest that nutrition education should begin from earlier stages of the disease.
Acute Effect of Various Atrioventricular Intervals on Left Ventricular Diastolic Function in Programming of Cardiac Resynchronization Therapy Patients

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Abstract

Objective: Cardiac resynchronization therapy (CRT) is a rapidly evolving treatment option for patient with drug refractory heart failure there are a few studies about the effect of atrioventricular (AV) optimization on left ventricular diastolic function so we planned this study for assessment of acute effect of various AV intervals on diastolic function in CRT

Methods: Thirty (19 male /11 female /mean age= 58 years old) consecutive CRT patients were included at first CRT device was set for simultaneous stimulation of both ventricles and then we set the AV delay of device at shortest possible base on mitral inflow pattern on pulse wave Doppler and then we progressively increased AV delay by 20 ms for up to six steps. About five minutes after each setting change. We measured routine diastolic variables on conventional pulse wave Doppler and tissue Doppler imaging.

Results: We found that there is statistically significant difference between the effect of shortest AV delay and longest AV delay on left ventricular diastolic function (p valve = 0.033) and the best AV delay interval based on the ratio of E wave velocity in conventional pulse valve Doppler of mitral valve to Ea velocity of mitral valve annulus in tissue Doppler imaging (E/Ea) was about 134+/-37 ms(mean+/-SD) we also found that the effect of AV optimization on diastolic function is not completely parallel to effect on systolic function by measurement of left ventricular velocity time integral by

Concision: Atrioventricular optimization after CRT has significant acute effect on diastolic function of left ventricle and should be consider in post CRT optimization we also found that the effect of AV optimization on diastolic function is not completely parallel to its effect on systolic function.
Age-Related Differences in Patients with Stable Angina or Acute Coronary Syndromes

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Abstract

Objective: This study was designed to evaluate the demographic and clinical characteristics as well as investigation findings of young patients with stable angina (SA) or acute coronary syndromes (ACSs).

Methods: A review of the angiography registry revealed that 18137 patients had SA or ACSs. We compared the patient characteristics between three groups of patients &gt;= 40 yr, 40-60 yr, and &gt; 60 yr.

Results: Of the three groups, the youngest group (&gt;=40 yr) was most likely to be male (82%) have a family history of cardiovascular diseases (35.7%) and consume cigarettes (37.7%) or opium (18.7%) the prevalence of diabetes dyslipidemia, and hypertension was highest in the elderly (&gt; 60 yr) patients. The most common presentation was ST Elevation myocardial infarction (STEMI) and stable angina for the youngest and the elderly groups respectively. Normal coronary was reported in 35.3% of our youngest patients versus only in 9.7% of the elderly patients. There was a direct correlation between aging and the territory of coronary involvement (p &lt; 0.0001) the youngest patients were interventions (74.3%) more commonly than were the other two groups while bypass grafting was considered for the 38.5% of the elderly group.

Conclusion: The risk factors and demographic and clinical findings of our youngest patients differed considerably from those of their older counterparts of our three groups of patients. The presentation of STEMI was highest in the youngest group who had the highest likelihood of being male smokers and having an underlying family history. The fact that coronary diseases are liable to exacerbate in tandem with age renders the consideration of aggressive risk-factor modification and screening among younger patients and their families in the Iranian population all the more significant.
Aortic and Mitral Valve Atherosclerosis: Predictive Factors and Associations with Coronary Atherosclerosis Gensini Score
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Abstract

Objective: Valvular atherosclerosis is defined as extra and intracellular lipid deposition, thickening of the fibrosa layer, decreased thickness of the spongiosa, and chronic inflammation. We sought to identify the predictive factors for valvular atherosclerosis and assess the possible associations between valvular atherosclerosis and coronary atherosclerosis using the associations between valvular atherosclerosis and coronary atherosclerosis using the gensini score.

Methods: Between January 2004 and May 2008, 1400 adult patients underwent mitral or aortic valvular surgery with or without coronary artery bypass grafting (CABG) at our center. From the total study population, 68 (4.85%) patients had atherosclerotic valves in histopathological evaluations. The risk factors for valvular atherosclerosis were identified via a comparison between the said 68 patient and another 115 patients, who had valvular surgery without valvular atherosclerotic changes.

Results: The distributions of atherosclerotic changes in the cardiac valves were as follows: 35 (51.5%) patients with aortic atherosclerosis, 27 (36.7%) with mitral atherosclerosis and 6 (8.8%) with both mitral and aortic valve atherosclerosis. Our univariate analysis revealed that age, gender, diabetes, body mass index (BMI), hyperlipidemia, smoking habit, diabetes, and aortic stenosis were the risk factors for valvular atherosclerosis. Also stages of coronary artery atherosclerosis using gensini score were significantly higher in the patients with valvular atherosclerosis.

Conclusion: Valvular atherosclerotic changes are strongly analogous with coronary atherosclerosis and generalized atherosclerotic processes. Our results also showed that BMI, smoking habit, diabetes, and aortic stenosis were the risk factors for valvular atherosclerosis.
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Abstract

Objective: This study was designed to investigate the association between the baseline hemoglobin (Hb) values with in-hospital mortality in patients with an acute ST-segment elevation myocardial infarction (STEMI)

Methods: In this historical cohort data relating to 2028 patients hospitalized with acute STEMI was obtained from a cardiovascular registry to evaluate the independent relationship between the Hb levels and in-hospital mortality a multivariate logistic regression model was used

Results: In-hospital death was occurred in 118 (5.8%) patients who had the lower the Hb level and Hct valve comparing with the survived patients (14/3 +/- 1.9 vs 13.4 +/- 2.2 g/dl 42.1 +/- 51 vs 39.9 +/- 6.3 p< 0.0001) after adjustment for differences in baseline characteristic a reverse relationship between baseline hemoglobin level and in-hospital mortality was observe (adjusted odds ratio (OR) OF 0.877, 95% CL 0.778 TO 0.989 P=0.032 ) Additionally diabetes and age were independent risk factors for mortality with OR of 2.408 (1.516-3.824 p< 0.0001) and 1.048 (1.026-1.071; p<0.0001)

Conclusion: Respectively in STEMI population the lower Hb level is independently associated with increase risk for in-hospital death also the aging and diabetes are the independent predictors of the in-hospital mortality.
Association between Hemoglobin Level and Major Adverse Cardiac Events after Percutaneous Coronary Intervention
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Abstract

Objective: This study was designed to examine association between hemoglobin (Hb) level and major adverse cardiac events (MACEs) after percutaneous coronary intervention (PCI).

Methods: An historical cohort study was conducted from data relating to the consecutive patients hospitalized for PCI and followed for at least 9 moths we examined the association between baseline Hb values and MACEs in 3372 patints underwent PCI and had laboratory record of the baseline Hb.

Results: In 9-month follow-up 123 patients with MACEs and 3249 patients without MACEs were compared. In multivariate logistic Regression after adjustment for differences in baseline characteristics and when those with hemoglobin values between 12 and 14 g/dl were used as the reference value MACEs increased as Hb level fell below 10 g/dl with an adjusted odds ratio (OR) of 3.299 (95% CL 1.211 to 8.921 p= 0.020 diabetes mellitus was also as an independent predictor for the MACEs (odds ratio 2.051, 95%CI, 1.368-3. 076 p=0.001)

Conclusion: Anemia and diabetes mellitus is a powerful and independent predictor of major adverse cardiovascular events in patients undergoing PCI.
Change in Tricuspid Regurgitation Severity after Coronary Artery Bypass Grafting Alone in Patients With Moderate to Severe Tricuspid Regurgitation and Coronary Artery Disease

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Abstract

Objective: The aim of this study was to evaluate effect of isolated coronary artery bypass grafting (CABG) on tricuspid regurgitation (TR) severity in patients with moderate to severe TR.

Methods: From February 2003 to March 2008, 37 Patients (37.8% female, mean age 65.54 ± 7.57 y, mean left ventricular ejection fraction 44.11 ± 13.00 %) with moderate to severe non-organic TR and coronary artery disease underwent isolated CABG, included in this study.

Results: 21.6% of patients had preoperative right ventricle (RV) systolic dysfunction, 18.9% RV dilation, 83% pulmonary artery pressure (PAP)>30 mmHg, 8% > 50% right coronary artery (RCA) stenosis and 59.5% left ventricular (LV) systolic dysfunction. Improvement of TR severity to normal or mild was found in 59.5% whereas TR severities was not changed or even worsen in 40.5% of patients. EPAPs, 50.0% left ventricle (LV) and 16.0% RV systolic dysfunction. TR severity improved in 64% after CABG, whereas it remained unchanged or even worsened in others (p<0.001). Patients with inf. MI showed no improvement in TR whereas patients without inf. MI had significant improvement of TR after CABG (p=0.050). Mean PAPs reduced from 41.32 ± 10.99 before surgery to 34.95 ± 7.23 mmHg thereafter (p<0.001). Improvement of TR severity after CABG was not related to preoperative RV size and function, LV systolic function or PAPs reduction after surgery.

Conclusion: Although TR severity decreased remarkably after isolated CABG, a considerable number of the patients had no TR regression. According to this study, only absence of inferior MI was significantly correlated to TR improvement after CABG. Further prospective studies with long-term follow-up are needed to determine the other factors predicting TR regression after pure CABG.
Clinical Outcomes of Percutaneous Coronary Intervention in Patients with Three-vessel Disease: Result from a Single-center Registry

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Abstract

Objective: There is still debate on the best treatment method for patients with multivessel coronary artery disease. Our aim was to describe the in-hospital and 3-year follow-up adverse outcome in patients with three-vessel disease (3VD) undergoing percutaneous coronary intervention (PCI).

Methods: From April 2003 to March 2005, data were collected on 418 consecutive 3VD patients undergoing PCI at our Center. Primary PCI cases were excluded. Three-year follow-up was completed for 93 % of patients. The primary endpoint was the occurrence of major adverse cardiac events (MACE) which defined as cardiac death, myocardial infarction and target vessel revascularization (TVR).

Results: A total of 617 coronary artery lesions were treated implanting 578 stents with drug-eluting stents (DES) used in 57 (9.9 %) of the lesions. Of the total 3912 patients undergoing PCI 425 (10.7%) had 3VD (mean age: 57 ± 10; 75.0 % men). Almost sixty percent of treated lesions were of the B2-C type and clinical success rate was 92 %. During hospitalization, MACE occurred in 8 patients (1.9 %).The incidence of in-hospital death, myocardial infarction, and repeat revascularization were 0.2 %, 1.8 %, and 0 %, respectively. At 3-year follow-up incidence of MACE was 12.1 % with a myocardial infarction rate of 1.8% and TVR rate of 9.0 %. Eight patients died of cardiac death (2.1 %) during follow-up.

Conclusion: The present study suggests that patients with 3VD who underwent PCI with stenting in at least one vessel have a good 3-year outcome with a low incidence of MACE.
Clinical Outcomes of Pure Valve Heart Surgery
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Abstract

Objective: Mortality and morbidity after pure valve heart surgeries have been a major problem of these recently increasing procedures during last decades the present investigation was under taken to describe major in hospital mortality and morbidities of isolated valve heart surgeries during a five year period.

Methods: A total of 974 patients who were undergone pure valve heart surgeries over a five year period were enrolled in the study patients demographics and risk factors operative information and postoperative out comes data were extracted from our computerized surgery data base and analyzed retrospectively descriptive analysis mean + standard deviation and percent were used to analysis, mean +standard deviation and percent were used to analyze this study.

Results: The mean age of enrolled patients was 48/36+ 13/75 major post operation complications in this study were atrial mitral valve surgeries was the leading procedure in our study in which the most common complication was a trial fibrillation (n=108) followed by prolonged ventilation (n=11) prolonged ventilation in our study were most commonly seen after combined mitral and tricuspid valve surgeries stroke incidence was higher in mitral valve procedures group (n=4) renal failure was mostly seen after mitral valve (n=7) and aortic valve (n=7) surgeries

Conclusion: Overall mortality rate was 4/4% that was consistent with other reports (4/8%)
Abstract

Objective: Diffuse coronary artery disease may not respond to conventional revascularization methods such as PTCA and CABG. Development of collateral arteries may increase blood supply in the ischemic area. In this study we compared angiogenic effect of mesenchymal stem cells (MSCs) and slow released bFGF in a large animal ischemic heart model.

Methods: Acute MI was induced in 24 sheep by ligating the second diagonal branch of the left anterior descending coronary artery. After ligation, in 6 animal autologous MSCs were transplanted in the border zone of infarcted area. In 6 other sheep long acting bFGF (bFGF + poly lactide-co-glycolide) was injected in the same area. In 2 control groups vehicles were injected. Cardiac function was evaluated pre and postoperatively using echocardiography. After 2 months all animals were sacrificed. Immunohistochemistry (IHC) and electron microscopic studies were performed.

Results: Echocardiography and IHC in study groups showed significant increase in ejection-fraction and vascular density in myocardium. But we didn’t observe significant difference between MSCs and bFGF groups in the light of angiogenesis.

Conclusion: Intramyocardial administration of slow release bFGF and bone marrow derived mesenchymal stem cells can promote the growth of small arteries and capillaries and improve myocardial function in the early period after acute MI.
Comparison of Benefits from Cardiac Resynchronization Therapy in Patients with Ischemic Cardiomyopathy versus Idiopathic Dilated Cardiomyopathy in Patients of Tehran Heart Center from May 2004 to March 2007

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Abstract

Objective: We sought to evaluate response of cardiac resynchronization therapy in these subsets in Iranian patients cardiac resynchronization therapy (CRT) is a recently introduced option for patients with severe heart failure and intraventricular conduction disturbances however, it is estimated that 20% to 30% of patients may not respond to CRT. There are some controversial issues about characteristics of responders. Some studies showed patients with ischemic cardiomyopathy may respond less favorably to CRT compared with patients with idiopathic dilated cardiomyopathy and visa versa.

Methods: Eighty three patients with end- stage heart failure. New York heart association (NYHA) class III or IV, left ventricular (LV) ejection fraction <35% QRS >120 ms, with suitable echocardiographic criteria received a biventricular pacemaker. After 6 months response defined as being alive, no hospitalization for cardiac decompensation, and an improvement in NYHA class>=1 grade

Results: Of the 83 patients 57.8% (n=48) had ischemic cardiomyopathy and 42.2%(n=35) idiopathic dilated cardiomyopathy at 6 months follow- up the percentages of responders to CRT showed no significant difference in both groups (79.2% vs. 65.7% p value= 0.17)

Conclusion: In our study the underlying etiology of heart failure (ischemic vs. idiopathic dilated cardiomyopathy) was not related to the response to CRT however there is a trend for better response in ischemic cardiomyopathy.
Comparison of Short-term and Long-term Outcomes between off-label and on-label Drug-eluting Stents
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Abstract

Objective: This study compares In-hospital and long-term follow-up of the on-off-label implantation of drug-eluting stents (DESs) in a retrospective study.

Methods: From April 2003 to June 2005 a total of 1330 patients underwent percutaneous coronary intervention with drug-eluting stents (Cypher or Taxus) in our center. Off-label implantation of DESs was performed for left main coronary artery lesions, total occlusions, ostial lesions, bifurcation, restenotic lesions, lesion in bypass graft, ejection fraction<30% and acute myocardial infarction. Patients who received bare metal stents or different drug-eluting stents were excluded.

Results: In patient characteristics, hypertension was more frequently presented in on-label vs. off-label DESs group. Diffuse and type B2/C lesions were more frequently with off-label vs. on-label DESs. There were no significant differences in In-hospital mortality and myocardial infarction, but non-Q wave myocardial infarction was more frequently in off-label (2.7% vs.0.9%, p=0.015). In long-term follow up, major adverse cardiac events(MACEs) occurred more frequently in off-label group but were not significant difference between two groups.

Conclusion: DESs use in the off-label situations studied was safe and was not associated with increased In-hospital myocardial infarction or death. Multivariate analysis showed that off-label DES implantation was not a risk factor for target vessel revascularization or MACEs as compared with on-label DESs.
Demographic and Clinical Characteristics, In-hospital Management and Outcome of Young Patients with Acute ST Elevation Myocardial Infarction

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Abstract

Objective: Objective this study was designed to evaluate the demographic and clinical findings and in-hospital management and outcomes in young patients with an acute ST-segment elevation myocardial infarction (STEMI)

Methods: A review of the cardiovascular disease registry showed that 2028 patients had acute STEMI patient characteristics in 109 (5.4%) subjects <= 40 and 1919 subjects > 40 years old were compared

Results: Results the young patients had less diabetes hypertension dyslipidemia and history of MI or prior revascularization they were also more likely to be male (92.7% vs. 74%) smokers (58.7% vs. 31.7%) and have a family history of cardiovascular diseases (CVD) (50.5% vs. 23.4%) the young patients also had a higher prevalence of angiographically normal coronary artery (13.7% vs. 0.9% p<0.001) . in addition the young patients were more likely to undergo percutaneous coronary artery bypass grafting was more common in the old ones (p<0.001) in-hospital deaths were markedly different between the young and old patients (0.9% and 6.1%)

Conclusion: Conclusion in our acute STEMI population the cardiovascular risk profiles clinical findings, and severity risk profiles clinical findings and severity of coronary disease of the young patients differed significantly form their elderly counterparty. The young patients with acute STEMI had a favorable outcome by comparison with the elderly patients.
Determinant Factors of Renal Failure after Coronary Artery Bypass Grafting with On-pump Technique

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Abstract

Objective: Postoperative acute renal failure (ARF) following cardiopulmonary bypass (CPB) is one of the most serious complications of cardiac surgery with significant increase in mortality, particularly, if there is requirement for haemodialysis. The aim of the study was to investigate determinant factors of acute renal failure after isolated on-pump coronary artery bypass grafting (CABG) surgery.

Methods: This retrospective study was carried out between May 2002 and May 2007 on 13315 adult patients who underwent isolated CABG with cardio pulmonary bypass. Patients with age < 18 years and concomitant cardiac and/or non-cardiac surgeries, history of renal failure before operation and chronic renal failure requiring dialysis were excluded. Preoperative and operative variables were measured. A multivariate logistic regression model was constructed to identify independent risk factors developing post on-pump CABG renal failure.

Results: Acute renal failure was found in 85 (0.6%) of patients with isolated on-pump CABG. The mean age of patients was 58.63±9.48 years and 25.5% of them were female. Multivariate logistic regression analysis identified age (OR=1.035; p=0.002), female gender (OR=1.622; p=0.037), history of peripheral vascular disease (PVD) (OR=2.579; p=0.042), diabetes mellitus (OR=1.918; p<0.001), emergent and urgent surgery (OR=1.744 and OR=7.901, respectively; p=0.003), cardiopulmonary bypass time (CPB)>70 minutes (OR=1.944; p=0.007), and intra aortic balloon pump insertion (IABP) (OR=10.181; p<0.001) as the independent risk factors of ARF. Post operation need to dialysis was 8(9.41%) and their mortality rate was 4 (4.70%) which not related to renal complication.

Conclusion: We concluded that age, female gender, positive history of diabetes and PVD, urgent surgery, CPB time more than 70 minutes and need to IABP were independent determinant factors of ARF post on-pump CABG.
Early Outcome of off- pump Coronary Artery Bypass Surgery: Younger Patients versus the Elderly

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Abstract

Objective: Background: over the past decade, an increasing number of isolated coronary artery bypass surgery number of isolated coronary artery bypass surgery (CABG) were performed on a beating heart (off- pump) to evade the complications associated with cardiopulmonary bypass. Off- pump bypass is viewed as a desirable alternative despite its potential for reducing morbidity and mortality, the role of off – pump bypass surgery in clinical practice remains controversial. We considered the mortality and morbidity of off- pump CABG in young (less than 45 years old) and the elderly (over 70 years old).

Methods: Methods between January 2003 and February 2008 off- pump CABG was attempted for 306 patients who required isolated CABG in Tehran heart center. Among these, 37 patients were less than 45 years old and 31 cases were over 70.

Results: Results in- hospital mortality was not occurred in the two studied groups. Postoperative complications were found in 3 cases of young patients including a trial fibrillation (1 case), brain stroke (1 case), brain stroke (1 case) and mediastinitis (1 case). Whereas a trial fibrillation and renal failure were observed in 3 and 1 elderly patients respectively. There was no statistically significant difference was found in the length of hospital stay between the young patients and the elderly (5.65± 1.21 vs 6.13±1.67 days respectively, p=0.174).

Conclusion: Conclusions considering early outcome of off- pump CABG in young and elderly patient’s mortality and morbidity of the procedure are not significantly different in the two age groups.
Effect of G-CSF on Atherosclerosis in Cholesterol Fed Rabbits

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Abstract

Objective: Granulocyte colony-stimulating factor (G-CSF) is a Glycoprotein and a member of hematopoietic cytokines. G-CSF induces the release of hematopoietic stem cells and endothelial progenitor cells (EPCs) from bone marrow. There are many reports that G-CSF prevents left ventricular (LV) remodeling and dysfunction after acute myocardial infarction but effect of GCSF on atherosclerosis has not been completely studied yet. There is a report that GCSF can accelerate restenosis after PCI. In this study we demonstrate the effect of GCSF on atherosclerosis.

Methods: Male New Zealand white rabbits, weighing approximately 2 kg, were divided into 2 groups, a control group and GCSF group. Both groups received normal standard laboratory chow with 2% cholesterol. After 3 months, GCSF (100μg/kg) was injected daily for 7 days to the GCSF group subcutaneously. After one month of receiving GCSF, blood sample was taken from all animals and then they sacrificed and aorta was dissected and prepared for pathologic evaluation.

Results: Blood sample taken from animals showed hypercholesterolemia in both groups. WBC count of GCSF group demonstrated leukocytes. Atherosclerosis plaque was seen in all animals and the percentage of plaques was significantly higher in GCSF group than control group.

Conclusion: It seems that short term administration of G-CSF can enhance progression of atherosclerotic plaque. A suggestion for these results is the stimulation of an inflammatory state within the arterial wall by mobilization of inflammatory cells. Adhesion of leucocytes to the arterial wall can develop atherosclerosis. The present study demonstrates association between G-CSF and atherosclerosis.
Effect of Gender and Type 2 Diabetes Mellitus on Heart Rate Recovery in Patients with Coronary Artery Disease after Cardiac Rehabilitation

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Abstract

Objective: The purpose of this study was to clarify whether type 2 diabetic patients with coronary disease are subject to similar benefits on heart rate recovery (HRR) as non-diabetic coronary individuals after cardiac rehabilitation assessing separately male and female subjects separately.

Methods: Data used for the analyses were from an eight-week phase II cardiac rehabilitation including 284 patients with ischemic heart disease and were managed between July 2004 and January 2006. The heart rate parameters were compared between diabetic and non-diabetic subjects before and after cardiac rehabilitation.

Results: Diabetic and non-diabetic patients had similar age and left ventricular ejection fraction among men non-diabetic patients achieve greater improvement in peak heart rate and heart rate recovery (HRR). Additionally lower resting heart rate was found in non-diabetic men after rehabilitation in women > 50 years there was no significant difference between diabetic and non-diabetic the non-diabetic women < 50 years showed significantly higher peak heart rate and HRR compared with diabetic women.

Conclusion: These results indicate that benefit of cardiac rehabilitation in HRR is significantly lower in type 2 diabetic men improvement of HRR is not associated with diabetic status in women >= 50 years. The response to cardiac rehabilitation in women may appear to be more influenced by age at menopause rather than diabetes mellitus.
Evaluation of Endothelial Dysfunction in Normal Coronary Patients with Slow Flow

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Abstract

Objective: This study evaluated endothelial function in patients with SCF and patients with normal coronary flow by means of FMD. Slow coronary flow (SCF) is slow dye progression in the coronary arteries during selective angiography. Studies suggested flow-mediated dilation (FMD) (a simple and non-invasive method for determining endothelial function) was impaired in SCF.

Methods: Patients with normal coronary and SCF entered to case (n=45) and patients with normal coronary and normal coronary flow entered to control group (n=81). Using sonography at the day after angiography, we measured diameter of brachial artery at rest, after inflation of sphygmomanometer (endothelial-dependent flow-mediated vasodilatation [EDFV]) and after use of sublingual nitrate (endothelial-independent flow-mediated vasodilatation). SCF was defined as more than 2 standard deviations of frame count from normal published range for that particular vessel. Endothelia dysfunction was EDFV lesser than the standard reference. The Chi-square test and independent two sample T test were used to investigate correlation of SCFP with patients' characteristics and coronary diameter. Multivariate regression was used to investigate correlation of frame count and FMD with endothelial dysfunction.

Results: Frame count significantly correlated with size of coronary arteries and rise of serum creatinine but showed no correlation with patients' characteristics. Based on size of coronary arteries, endothelial dysfunction showed no relationship with frame count. Frame count in coronary arteries showed no relationship with endothelial dysfunction (p=0.839).

Conclusion: We found insignificant relationship between slow coronary flow and endothelial dysfunction, but significant correlation between serum creatinine and frame count of coronary arteries.
Gender Related Deference of Physical Activity and Risk Factors of Coronary Heart Disease


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Abstract

Objective: This study was designed to evaluate the association between physical activity levels and risk factors of coronary heart disease (CHD) in respect to gender of hospitalized patients with acute coronary syndromes (ACSs).

Methods: A review of the Tehran heart center cardiovascular disease registry (THCCVDR) showed that 12072 patients (62% men and 38% women) had ACSs between July 2003 and August 2007. The correlation of physical activity and CHD risks were assessed in male and female genders.

Results: Male patients with low level of physical activity were more likely to be older and have dyslipidemia (54.3% vs. 47.2%) diabetes (50% vs. 24.5%) and hypertension (67.4% vs. 37.2%) whereas the family history of CHD was more common in patients with high level of physical activity. In female patients, the pattern of CHD risk in low and high level of physical activity were similar to men but the women with high physical activity level were more likely to have history of dyslipidemia. Consistently, women with high level of physical activity had significantly higher serum triglyceride compared with women with low physical activity level (215.5±136 vs. 147.2±62.2 mg/dl; p<0.001).

Conclusion: Physical activity level is associated with an increased risk factor coronary heart disease in patients with acute coronary syndrome population among women. Physical activity level was significantly associated with dyslipidemia and hypertriglyceridemia.
How Much of Tricuspid Regurgitation Severity is Related to Pulmonary Hypertension in Patients with Mitral Stenosis?
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Abstract

Objective: In regard to common concomitance of tricuspid regurgitation (TR) with significant mitral stenosis, even without tricuspid valve rheumatismal involvement, we aimed to explore the relation between TR severity and pulmonary artery hypertension (PAH) in patients underwent mitral balloon valvotomy (MBV).

Methods: We analyzed echocardiography data of 133 consecutive patients (82.0% female, mean age 44.68 ± 12.56 y) with different degrees of TR severity underwent MBV from April 2006 to March 2008. The pulmonary artery pressure (PAP) >35 mmHg was considered as PAH.

Results: Before MBV, of 133 patients, 36.1% had moderate to severe TR, 92.5% PAH, 18.0% right ventricular (RV) dilation (RV dimension ≥33 mm). After MBV, TR severity improved in 41.4%, worsened in 8.3%, not changed in 50.4%. Before and after MBV, PAP was significantly correlated with TR severity and difference of mean PAP in patients with and without improved TR was significant (p=0.021). TR severity and mean PAP (from 52.83 ± 18.81 to 35.89 ± 9.38 mmHg) decreased significantly after MBV (both p<0.001). This reduction was significantly correlated to the amount of PAP decrease. A cut-off point of ≥19 mmHg reduction in PAP had a specificity of 71.79% and sensitivity of 52.73% to show TR severity improvement (by Receiver-Operative-Characteristics analysis). Mean of RV dimension decreased from 28.94 ± 5.42 to 27.95 ± 4.62 mm (p<0.001). In patients with RV dilation, TR reduced significantly (p<0.001).

Conclusion: Improvement of TR severity is directly correlated to the amount of PAP reduction after MBV. More studies are needed to well define a cut-off value for PAP reduction related to TR severity improvement.
In-hospital and Mid-term Outcomes of Following Percutaneous Coronary Intervention in Patients >65 Years Old Comparing to Younger Patients

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Abstract

Objective: Advanced age is an independent risk factor for adverse outcomes in patients who underwent percutaneous coronary intervention (PCI). We compared the outcomes of PCI in patients aged >65 years old with younger patients.

Methods: From April 2003 to June 2005, a total of 5815 patients underwent PCI at our center. Of the total 5576 patients, 1320 (27%) were above 65 years old. In-hospital major adverse cardiac event (Mace) and complications include nonfatal myocardial infarction, cardiac death, emergent coronary artery bypass graft (CABG) and mid-term outcomes at 9-month follow-up include cardiac death, nonfatal myocardial infarction, CABG, target vessel revascularization (TVR) and target lesion revascularization were investigated (TLR).

Results: Two patients aged >65 years had in-hospital MI comparing to younger patients, in-hospital death was similar in both groups, and in mid-term outcomes; nonfatal MI (2.7% vs. 1.7% , P = 0.03), CABG (1.8% vs. 2.4% , P = 0.25), TVR(3.2% vs. 4% , P = 0.23), TLR (1.5% vs 1.8%, P = 0.47), cardiac death (1.7% vs. 0.5% , P<0.001), MACE ( 7.1% vs. 6.6 % , P = 0.51), so nonfatal MI and cardiac death occurred more in patients aged >65 years old and there were no difference in TVR, TLR, and MACE between those patients.

Conclusion: In-hospital complications were not different in the patients above >65 and younger, and in mid-term followed up nonfatal MI and cardiac death were more significantly in advanced age patients, then age >65 could be a predisposing factor for nonfatal MI and cardiac death in patients who underwent PCI.
In-hospital Mortality of Post-operative Renal Failure After Coronary Artery Bypass Surgery

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Abstract

Objective: Acute renal failure (ARF) following cardiopulmonary bypass (CPB) is a serious complication and associated with mortality rate varying from 7% to 38% in diabetic patients. This study was conducted to determine the cause of death in acute renal failure after isolated on-pump coronary artery by pass graft (CABG).

Methods: We analyzed the data of 85 patients who survived after 24 hour after open heart surgery with postoperative renal failure in Tehran Heart Center from May 2002 to May 2007. Mean length of stay of these patients was 10.22 ± 6.25 days.

Results: Mean length of stay of these patients was 10.22 ± 6.25 days and median (25%, 75% percentile) total ICU hours were 107 hours (60 hr, 250 hr). Twenty two (25.88%) of them died in hospital. Ten patients (45.45%) expired due to cardiac causes. Two of them died because of neurologic complications (31.81%). Renal complication contributed 13.63% cause of death, and two patients (9.09%) died due to infectious complications.

Conclusions: Mortality rate for established ARF was extremely poor (25.88%). Prevention of this disastrous complication appears to be better than treatment before it is fully established. However, newer aggressive forms of early renal replacement/transplant therapies may have some promise.
In-hospital Outcome of Endovascular Repair of Aortic Diseases with Medtronic Stent Grafts in Catheterization laboratory

HajiZeinali AM, Marzban M, Zafarghandi MR, Shirzad M, Alidoosti M, Salarifar M, Nematipoor E, Pour Hosseini HR, Kassaian SE, Shirani SH, haghighat B, kazemisaleh D, Mansur A, Shafiee N
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Abstract

Objective: Endovascular aortic repair (EVAR) had some superiority to open surgery in the initial outcome and was introduced as a new technique with low short term complications.

Methods: From Dec 2006 to April 2008, 23 patients underwent sequential endovascular repair of aortic aneurysms for the first time in Iran. EVAR has been done with Medtronic stent grafts, under general anesthesia in catheterization laboratory

Results: The EVAR group consists of 2 women and 21 men, with mean age 61 year old, 5 thoracic aorta aneurysms, 17 abdominal aorta aneurysms, one case both abdominal and thoracic aneurysms, 2 thoracic aorta dissections were repaired. Implantation of 1 stent in 6 cases, two stents in 15 cases, 3 stents in 3 cases and 4stents in 1 case with unilateral or bilateral open femoral arteriotomy surgery were done. The mean hospital stay was 6days and the mean operation time was 2 hours. In all cases successful implantations were done, in-hospital follow up showed no any problems. One patient had post procedure cerebral stroke with delayed mortality as a in-hospital major complication; minor complication such as anemia, vascular access hematoma, transient renal failure were controlled on hospital stay period in some cases. Controlled CT-angiography in some patient revealed no any significant endoleak.

Conclusion: EVAR was safe and effective in treatment of both abdominal aorta aneurysms (AAA), thoracic aorta aneurysms (TAA) and sub acute aortic dissection. It was feasible in catherization laboratory, under general anesthesia.
Lipoprotein (A) and Inflammatory Markers in Relation to ESR1 gene Polymorphisms

Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Objective: Estrogen is established to influence upon lipoprotein metabolism and inflammatory markers. Alternations in ESR1 expression and function may affect the role of estrogen in this regard. The aim of this study was to determine whether estrogen receptor α (ESR1) pvuII and XbaI gene polymorphisms have effects on lipoprotein (a) as well as inflammatory variables in an Iranian population.

Methods: Three hundred and ninety seven consecutive participants (228 men, 57.4%) who were admitted at our center for elective coronary angiography due to symptoms related to CAD were enrolled in our study. Total cholesterol (TCH), HDL-cholesterol, and triglyceride (TG) levels were determined by standard methods using commercial kits. LDL-cholesterol was calculated according to the Friedewald formula. The lipoprotein (a) levels were measured by ELISA method using Biopool kit and the CRP concentrations were determined by Latex Immunoturbidometry. The presence of PvuII and XbaI polymorphism within ESR gene were analyzed using polymerase chain reaction–based restriction fragment length polymorphism (PCR-RFLP).

Results: The frequency of homozygous and heterozygous were 25.9% and 50.1%, for pvuII genotypes, while 23.7% and 48.6%, for XbaI geneotypes, respectively. After adjusting for CAD and age, no impacts of ESR1 pvuII and XbaI polymorphisms were found on lipid profile, lipoprotein (a) level, and quantitative CRP either in total population or in subgroups stratified by gender.

Conclusion: ESR1 pvuII and XbaI gene polymorphisms did not seem to have an effect on lipoprotein metabolism or inflammatory variables such as CRP in our study group.
Abstract

Objective: In this study we aimed to investigate the clinical outcomes of sirolimus-eluting stents (PES) in our practice.

Methods: All consecutive patients treated exclusively either with SES or PES at our center from March 2003 to March 2007 were included. Patients with acute myocardial infarction within the preceding 48 hours were excluded. Finally, 1311 patients with 1455 lesions remained in the analysis.

Results: Patients in the SES group were more likely to present with recent unstable angina and MI (p<0.001 and p=0.021) and less likely with stable angina (p=0.003). Longer stents with smaller diameters were used in the SES group, corresponding with the lesion lengths and vessel diameters. Procedural success rate was higher in the PES group (99.1% vs 97.5% p=0.011). However, there was no clinical difference between the groups in the rates of cumulative major adverse cardiac events (MACE) (5.5% in the SES vs 3.3% in the PES group p=0.138) and target vessel revascularization (2.9% in SES vs 1.6% in PES group p=0.213). Multivariate analysis also did not detect any difference between the groups, however, reference vessel diameter was an independent predictor of MACE (hazard ratio=0.333 95% CL=0.120-0.925 p=0.035) and TVR (hazard ratio=0.170 95% CL=0.034-0.837 p=0.029).

Conclusion: Sirolimus and paclitaxel-eluting stents demonstrate similar clinical outcomes in follow-up this complex cohort.
Mediterranean Nutrition Regimen and Its Influences on Morbidity and Length of Stay after Coronary Artery Bypass Surgery

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Abstract

Objective: The goal of the present research was to determine possible impact of the Mediterranean dietary pattern on short-term outcome of coronary artery bypass surgery (CABG).

Methods: Four hundred and sixty one consecutive patients undergoing isolated CABG in Tehran heart center from May to September 2006 were interviewed at admission to surgical ward and before CABG operation and asked to report how often they consumed each of the food items. Nutritional assessment was obtained by food frequency questionnaire and the diet score was calculated on the basis of Mediterranean diet quality index (Med-DQI).

Results: There were no significant relationships between the adherence to different nutrition groups and postoperative morbidity in both men and women. Men with lower consumption of fruits and vegetables had longer length of stay in hospital (LOS); however, this result was not found in women. In multivariate analysis, no significant relationships were found between the total score of Mediterranean regimen and both morbidity and prolonged LOS.

Conclusion: Consumption of fruits and vegetables can reduce LOS in patients undergoing CABG and this effect is evident among men.
Microalbuminuria and Coronary Artery Disease Severity in Diabetic Patients

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Abstract

Objective: The rise of urinary albumin excretion has been proposed as a possible predictor of the cardiovascular mortality and morbidity, because some risk factors including diabetes (DM) are strongly related to microalbuminuria, the association of microalbuminuria with coronary artery disease (CAD) can be affected by these factors. The present study was aimed to evaluate the correlation of the microalbuminuria and CAD severity along with the effects of related factors particularly CM.

Methods: During September 2007 and January 2008, 446 angiography candidates were evaluated for the association between Albumin/Creatinine mg/gr (Alb/Cr) and CAD severity in univariate and in linear- regression analysis. Also interaction term testing for multiplicative interaction between alb/cr and DM was done.

Results: Of the 446 patients, 82.3% cases were normoalbuminuric, 40% was hypertensive and 22.7% was diabetic we found a significant correlation between GS and Alb/Cr (r=0.119: p=0.020) in analysis of regression sex, age and LDL were the independent predictors of severity of severity of CAD assessed by GS (R square -12%). Subsequently interaction term between Alb/Cr and DM was also significant (p=0.007) which COM filmed a considerable effect of microalbuminuria on GS in diabetic patients compared non-diabetic (B=0 153, SE=0.053, P=0.005 in diabetic: B= 0.015 SE= 0.038 p=0.689 in non–diabetics)

Conclusion: In our study although there was a significant correlation between GS and Urine Alb/Cr interaction between urine Alb/Cr and DM revealed that this correlation exists because of diabetic patients it is incompatible to some other studies which found this relationship in populations containing both diabetics and non-diabetics results of linear – regression analysis in diabetics and non – diabetics confirmed these findings as well.
Morbidity and Mortalities of Isolated Valve Heart Surgeries: Cross Sectional Study

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Abstract

Objective: Mortality and morbidity after pure valve heart surgeries have become a major problem after heart surgeries in the last decades, due to the increased number of pure valve procedures. The present investigation was undertaken to describe major in hospital mortality and morbidities of isolated valve heart surgeries during a five year period.

Methods: A total of 974 patients who had undergone pure valve heart surgery over a five year period were enrolled in the study. Patient demographics and risk factors, operative information and postoperative outcome data were extracted from our computerized surgery data base, and analyzed retrospectively.

Results: Of 974 patients 52.5% were women (n=511). The mean age of enrolled patients was 48.36 ± 13.75. Major post operation complications in this study were: Atrial fibrillation 343 (35.2%), prolonged ventilation more than 24 hours 63 (6.5%), renal failure 28 (2.9%), stroke 11 (1.1%), continuous coma, 9 (0.9%), sternal deep infection 7 (0.7%), transient ischemic attack(TIA) 7 (0.7%), valve dysfunction lead to reoperation 5 (0.5%). Valve heart surgery distribution was: Aorta 229 (23.5%), mitral 298 (30.6%), tricuspid 4 (0.4%), pulmonic 7 (0.7%), aortic and mitral 159 (16.3%), mitral and tricuspid 152 (15.6%), aortic, mitral, and tricuspid 102 (10.5%). The overall in hospital mortality rate of our isolated valve heart surgeries was 4.4% (n=43).

Conclusion: Complications are prevalent and exert a considerable influence on outcomes following valve procedures. Quality initiatives should focus on minimizing complications and improving processes of care that would enable complications to be better resolved if they occur.
Predictors of Quality of Life in Diabetic Patients with Coronary Artery Disease: The Impact of Mediterranean Nutrition Regimen

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Abstract

Objective: The impact of different nutritional regimens on quality of life in diabetic patients with coronary artery disease (CAD) is questioned. The objective of the present study was to determine the effects of different nutrition groups of Mediterranean regimen on diabetic patients with CAD in Iranian population.

Methods: We recruited 233 consecutive patients with the diagnosis of type 2 diabetes mellitus for at least 6 months candidate for isolated coronary artery bypass surgery in Tehran Heart Center from May to September 2006. Nutritional assessment was obtained by a validated semi-quantitative food frequency questionnaire (FFQ) and the diet score was calculated on the basis of Mediterranean diet quality index (Med-DQI). Quality of life was evaluated using the SF-36 questionnaire including the two scores of physical and psychological component summary scores.

Results: An adverse association was found between low cereal consumption and patients’ physical functioning (Beta= -10.516, P= 0.041). Also, psychological condition was adversely dependant to the consumption of saturated fatty acids (Beta= -10.875, P =0.031). The consumption of olive and fish is considerably low in studied patients, whereas the majority of them consumed cereal, fruits and vegetables acceptably high. Linear regression analysis also showed no correlation between final score of Mediterranean regimen and physical functioning (Beta=1.503, P=0.128) and psychological condition (Beta= -1.362, P=0.131).

Conclusion: Consumption of cereal can affect physical functioning and consumption of saturated fatty can influence psychological health of diabetic patients with CAD.
Prognostic Value of Body Mass Index on In-hospital outcome of Patients with Acute Coronary syndrome

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Abstract

Objective: Increased body mass index (BMI) is a risk factor for coronary artery disease (CAD). However, the relationship between increased BMI and in-hospital outcome of the patients with acute coronary syndrome (ACS) has not been well established. This study sought to quantify the effect of Body Mass Index (BMI) on early clinical outcomes following Acute Coronary Syndromes.

Methods: Total 18441 consecutive patients who registered from March 2004 to June 2008 in Tehran Heart Center CVD Registry were included in this study. Multivariate analysis compared the risk of in hospital death between overweight and obese group (BMI≥25 Kg/m²) and other patients (BMI<25 Kg/m²).

Results: Out of 18441 patients 57.8% (10660) were overweight and obese, and 42.2% (7781) had a normal weight or were underweight. Compared with normal and underweight group, overweight and obese group included more women, younger patients, positive family history of coronary artery disease, diabetes, and history of dyslipidemia and hypertension, but fewer patients with poor ventricular function. Both groups had similar prevalence of recent acute coronary syndrome and history of previous myocardial infarction. However, normal and underweight patients were more likely than overweight and obese patients to die in hospital (odds ratio [OR] =5.98, 95% CI 4.5 to 7.93).

Conclusion: The increase in BMI is accompanied by a significant increase in the prevalence of CAD risk factors. However, the in-hospital overall mortality in patients with ACS is lower in patients with higher BMI despite increased prevalence of risk factors as compared with those with low BMI.
Radiofrequency Ablation of Different Cardiac Arrhythmias; Success Rates and Complications During 14 Years of Experience


Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Objective: The aim of this study was to describe success rates, procedural and in-hospital complications of radiofrequency catheter ablation (RFCA) for different kind of arrhythmias.

Methods: Between March 1995, and May 2008, 790 patients (64.9% female, mean age; 45.01±14.74 years) underwent 795 procedures in two large hospitals: Shariati and Tehran Heart Center. Procedures were performed by two electrophysiologists. Electrograms were recorded on digital multichannel systems (EP-Med). Mean hospital stay was 2.58±1.63 days.

Results: RFCA was performed for 480(60.2%) pure atrioventricular nodal reentrant tachycardia (AVNRT) and 36(4.5%) AVNRT with concomitant other supra-ventricular arrhythmia. Other arrhythmias were included: Wolff- Parkinson-White syndromes; 162(20.5%), concealed accessory pathways; 66(8.4%), atrial flutter; 11(1.4%), atrial fibrillation; 8(1%), atrial tachycardia; 13(1.6%), Mahaim's bundle; 8(1%), and 4(0.5%) cases of other arrhythmias. We also performed RFA for 7(0.9%) ventricular tachycardia; 4(57%) of which were successful. The overall success rate was 93.5%. During the procedure, there were 26(3.3%) transient III-degree AV block (up to few seconds) and 4(0.5%) prolonged II- or III-degree AV block; 2(0.25%) of which required permanent pace maker. Other complications included; deep vein thromboses; 3, cardiac tamponade; 2, arterial emboli; one, local arterial dissection; one, and arteriovenous fistula; one. There was no occurrence of MI, pulmonary emboli, cerebrovascular accident, or mortality.

Conclusion: RFCA has high success rate. The complication rate was generally low and in the above centers it was similar as other large centers worldwide. The risk of permanent II or III degree AV block in patients undergoing RFCA is low and there is no risk of life threatening complications.
Right-sided Anomalous Pulmonary Venous Connection to the Superior Vena Cava

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Abstract

Objective: Some techniques have been introduced for repair of sinus venous atrial septal defect (ASD) with anomalous right-sided pulmonary venous connection to the superior vena cava.

Methods: We report a 9-year-old girl. Who presented with dyspnea and peripheral cyanosis. Preoperative echocardiography and angiography findings suggested a partial anomalous pulmonary venous connection (PAPVC).

Results: On cardiopulmonary bypass, the ASD was dilated, and anomalous pulmonary vein was anastomosed to the right atrium and redirected to the left atrium using an internal patch and a tube graft. Intra-operative or postoperative period was uneventful and patient is in good health at 4.5-year follow-up.

Conclusion: The repair of the high insertion of the anomalous pulmonary veins with redirecting the venous return through the sinus venous ASD by baffling intra-atrial through the can be a good choice with favorable long-term prognosis the reanastomosis to the RA and extension of the right anomalous pulmonary vein is a safe and effective correction for PAPVC with high insertion into the SVC. And avoids ling baffles, extensive SVC patching and caval translocation.
Selective Versus Exclusive Drug-Eluting Stents Implantation in Multi vessel Coronary Artery Disease
Kassaian SE, Goodarzynejad HR, Poorhosseini HR, Salarifar M, Alidoosti M, Nematipour E, Haji Zeinali AM, Payedari N, Hakki Kazazi E, Aghajani H, Sheikhfathollahi M, Sharafi A
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Abstract

Objective: The purpose of this study was to compare outcome of the two strategies: Selective use of DES (one or more DES for lesions at higher risk of restenosis + one or more BMS for other lesions in the same patient) compared to the exclusive use of DES in patients with multi vessel disease (MVD).

Methods: From April 2003 to May 2005, a total of 342 consecutive patients with 754 lesions who underwent multi vessel stenting were studied. Among whom, 94 (193 lesions) were treated exclusively by DES, and 248 (561 lesions) treated by combination of DES with BMS. Patients undergoing primary PCI were excluded. Major advanced cardiac events (MACE) defined as cardiac death, myocardial infarction and target vessel revascularization (TVR).

Results: Two-hundred and forty eight patients (mean age: 56.90 ± 10.53; 77.9% men) comprised selective DES group. Mean stent length, mean stent diameter, and the incidence of type C lesion (46.5% vs. 16.0%) were higher in DES subgroup of selective DES group as compared to BMS subgroup (all p<0. 001). At in-hospital and 1-year follow-up, all clinical outcomes such as death, Q-wave myocardial infarction (MI), target lesion revascularization (TLR), TVR, and MACE were comparable between selective and exclusive groups (All p=NS) except that the incidence of in-hospital non-Q-wave MI was higher in exclusive DES group (0 vs. 3.2%; p=0.021).

Conclusion: Our results suggest that selective use of DES in patients with MVD may be safe, feasible, and as effective as exclusive use of DES in appropriately selected individuals.
Staged Carotid Artery Stenting (CAS) and Cardiac Surgery (CABG) versus CABG without Carotid Intervention: Initial Results of a Prospective Clinical Study

Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Objective: In candidates of CABG who have significant carotid stenosis, there are no conclusive data to determine what treatment strategy is appropriate. This trial is designed to study the cardiac & neurologic outcomes of our hospital therapeutic strategy: staged CAS & CABG or CABG without carotid intervention in case of coronary instability and low risk carotid disease.

Methods: In this prospective cohort study, all patients with significant carotid artery stenosis who are CABG candidates are included. Eligibility for CAS followed by CABG, or isolated CABG without carotid intervention, is determined based on the joint decision of the interventional cardiologist, cardiac surgeon and neurologist. The monitored adverse events include death, myocardial infarction and stroke. A complete neurological history is taken and an examination performed on all patients by an experienced neurologist that evaluate patients using the NIH Stroke Scale at the baseline and after CABG.

Results: Between November 2007 and May 2008, 19 patients were included. Ten patients were scheduled for carotid stenting followed by CABG and 9 patients for isolated CABG without carotid intervention. There was no any complication in each group after CABG. This study will be ongoing to complete the sample size (N=62) in each group as a sequential trial.

Conclusion: The results of the present interim analysis show selection of appropriate protocol for management of CABG candidates with carotid artery stenosis such as: staged CAS and CABG in patients with unstable carotid disease but stable carotid disease and CABG without carotid intervention in patients with stable carotid disease but unstable cardiac disease, may provide few cardiac or neurologic complications.
The Association between Coronary Artery Diseases Documented by Coronary Angiography with the ESR1 Gene Polymorphisms


Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran.

Abstract

Objective: Estrogen provides protection against vascular disease via favorable impacts on lipid profiles as well as via vasodilatory, anti-inflammatory, fibrinolytic, and anti-proliferative effects that mainly exerted through estrogen receptor α (ESR1). Changes in ESR1 expression and function may fade the atheroprotective role of estrogens. Different studies in different setting and populations appears necessary to evaluate whether ESR1 gene variants can act as genetic markers of vascular pathology and influence the risk of cardiovascular disease. The aim of this study was to examine if there is a relationship between two of the known polymorphisms in the ESR1, named pvulII and XbaI, with the presence of angiographically determined CAD in an Iranian population.

Methods: The study consisted of four hundred and fifty patients (236 men, 52.4%) who were admitted at our center for elective coronary angiography due to symptoms related to CAD. Patients having angiographic evidence of atherosclerosis (Gensini score > 6.5) in their epicardial coronary tree were classified as having coronary artery disease (CAD + case group). Patients with Gensisni score ≤ 6.5) considered to have normal coronary (CAD − control group). The presence of PvulII and XbaI polymorphism within ESR gene were analyzed using polymerase chain reaction–based restriction fragment length polymorphism (PCR-RFLP).

Results: The PvulII genotype distributions were not also statistically different in CAD groups, and subgroups stratified by gender. For the XbaI polymorphism, G allele frequency in CAD + individuals were higher than CAD − individuals (52.4% vs. 45.2%, P = 0.032); however, after controlling for age, male sex, cigarette smoking and hyperlipidemia, XbaI GG genotype was not found to be an independent predictor for CAD occurrence (OR: 1.65; 95% CI= 0.901 – 3.03; P= 0.10).

Conclusion: We did not observe an association between ESR1 pvulII and XbaI gene polymorphisms in the risk of CAD in an Iranian population.
The Comparison between Zotarolimus-Eluting Stent with Sirolimus-Eluting Stent and Paclitaxel-Eluting Stent after Percutaneous Coronary Intervention: A Registry Based Study

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Abstract

Objective: The first two types of Drug-eluting stents are sirolimus-eluting stent (SES) and paclitaxel-eluting stent (PES) whereas there are some newer types such as zotarolimus-eluting stent (ZES). In this study we compared the ZES with SES and PES for their preventing role of major adverse cardiac events (MACE).

Methods: The information of all the patients with single vessel coronary heart disease underwent percutaneous coronary intervention (PCI) in Tehran Heart Center from March 2003 to March 2007 was collected in a computerized registry. The patients with primary PCI and unsuccessful procedure were excluding.

Results: From 1189 patients (29.3% in ZES, 25.9% in PES and 44.8% in SES groups) the incidence of MACE in ZES vs. SES and PES was respectively 2.0% 3.9% (p = 0.111) and 2.9% (p = 0.451). The incidence of TVR and TLR were 1.7% and 1.1% for ZES 3.0% (p =0.235) and 1.9% (p =0.397) for SES and 1.6% (p =0.920) and 0.7% (p = 0.690) for PES respectively. 4(1.1%) patients in ZES group had nonfatal myocardial infarction whereas 17 (3.2%, p = 0.052) patients in SES group and 8 (2.6%, p =0.165) patients in PES group.

Conclusion: There is no significant difference in MACE in these three groups. Though ZES prevention of MACE was slightly better than SES which can be because of the significant better condition of ZES patients in general characteristics, risk factors, lesion length and reference vessel diameter.
Abstract

Objective: Cardiovascular diseases are the main cause of death among dialysis-dependent patients. Published data have shown risk of myocardial ischemia and infarction were 16- to 19-fold increased when compared with similar populations without renal failure. Coronary artery bypass grafts in chronic dialysis patients have been recognized for a long time, the gold standard for revascularization. The aim of this study was to evaluate perioperative, and long-term mortality of CABG in dialysis dependent end stage renal disease.

Method: Twenty-five patients with ESRD maintained on chronic hemodialysis who underwent isolated CABG surgery at Tehran Heart Center between February 2002 and March 2008 were investigated retrospectively. All patients were evaluated for a follow-up period of 7 to 56 months (mean 29.11 ±15.69). Follow-up was accomplished by phone and use of the last out patient fills. Long-term result evaluation included mortality, morbidity and more frequent complications.

Results: The entire population consisted of 23 (92%) male and 2 (8%) female. The mean age of patients was 54.28 ± 11.36 years. Dislipidemia was the most prevalent (72%), The overall mean left ventricular ejection fraction was 48.80±10.79. All patients have isolated CABG with on-pump technique. Mean follow-up period in our study population was 29.11±15.69 months. Six patients could not complete follow-up period. Most prevalent complication was prolonged ventilation (12%). Mortality rate of long-term follow up was 31.57 %.

Conclusion: CABG surgery can be performed with increased but acceptable morbidity and mortality in chronic dialysis patients.
The Relationship of Obesity to Short- and Long – Term Outcomes of Percutaneous Coronary Intervention

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Abstract

Objective: The purpose of this study was investigation of short – and long – term outcomes of percutaneous coronary artery intervention with body mass index (BMI)

Methods: This study conducted on 1640 patients who had undergone PCI between march 2006 and march 2007 on base of body mass index our patients was classified to 3 groups first group underweight (BMI<25) second group normal weight (BMI 25-35) third group: overweight (BMI >35) in hospital complications and long term outcome (9 month) were compared between above 3 groups.

Results: Among patients 1165 cases (71%) were male more patients in male group were under weight (80.8%) and more patients in female group were overweight (62.7%) in patients characteristics hypertension diabetes cigarette smoking and hypertension diabetes cigarette smoking and hyperlipidemia were more frequently presented in third group (BMI>35) stable angina as the first presentation of ischemic heart disease in overweight patients was more than other groups (49.3% versus 48.1% in second group and 39.6% in first group p=0.001) no difference was observed in in-hospital outcomes according to BMI except emergent cardiac surgery that was more in overweight cardiac surgery that was more in overweight patients (1.3% versus 0.0%p=0.001) TLR ( target lesion rest enosis ) was more in overweight patients with significantly difference (5.6% versus 1.1% in second group and 0/9% in first group p=0.003) cardiac death after 9 month was more in second group (7% versus 2% in first group and 0% in third group p= 025)

Conclusion: The majority of patients undergoing PCI were male and most of them were in underweight group obesity significantly was associated with increase of TLR and emergent cardiac surgery.
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