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مقالات چاپ شده مرکز قلب تهران
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Metabolic syndrome: stronger association with coronary artery disease in young men in comparison with higher prevalence in young women
Saeed Sadeghiana, Soodabeh Darvisha, Shabnam Salimi, Farah Ayatollahzadeh Esfehani, Nader Fallah, Mehran Mahmoodian, Mojtaba Salarifar and Abbasali Karimia

Background Being overweight, a constituent of the metabolic syndrome, is also an important contributing factor to the development of coronary artery disease in younger patients, compared with the older patient population. Owing to the above-mentioned fact, we sought to assess the association of the metabolic syndrome with premature coronary artery disease.

Methods In an analytic cross-sectional study, 940 patients (553 women aged \( \leq 55 \) years and 387 men aged \( \leq 45 \) years), 637 with coronary artery disease and 303 without coronary artery disease, were evaluated. The extent of atherosclerosis was assessed with a clinical vessel score. Besides established coronary artery disease risk factors, all patients were evaluated for the presence of metabolic syndrome based on the National Cholesterol Education Program Adult Treatment Panel III criteria.

Results The overall prevalences of metabolic syndrome and coronary artery disease were 56 and 67.8%, respectively. Metabolic syndrome prevalence was higher in women than in men (69.6 vs. 36.4%, \( P<0.001 \)). The odds ratio of metabolic syndrome for premature coronary artery disease was 1.82 (95% confidence interval 1.17–2.82) after adjusting for age and multiple established coronary artery disease risk factors; the strength of this association varied by sex (2.17 in men vs. 1.22 in women).

Conclusions This study revealed a stronger association between metabolic syndrome and coronary artery disease in men \( \leq 45 \) years than in women \( \leq 55 \) years. It seems that endogenous estrogens may play a role in reducing the effects of metabolic syndrome-related risk and therefore in spite of higher prevalence of metabolic syndrome in young women, the effect of this syndrome on coronary artery disease is more dominant in young men. Coron Artery Dis 18:163–168 © 2007 Lippincott Williams & Wilkins.

Keywords: coronary artery disease, metabolic syndrome, risk factor, men, women

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Introduction Epidemiologic data suggest that risk factors may be different in younger vs. older patients [1]. Excess weight is an important contributing factor to the development of coronary artery disease (CAD) in younger compared with older patients [2]. Furthermore, being overweight is part of the metabolic syndrome (MetSyn), which is characterized by the clustering of disturbed glucose and insulin metabolism, overweight and abdominal fat distribution, dyslipidemia, and hypertension [3]. Owing to the prevalence of overweight and sedentary lifestyle worldwide [4], the MetSyn is becoming increasingly common. Knowledge of the impact of the MetSyn on cardiovascular disease in the general population is crucial for developing public health policy and clinical guidelines for its prevention and treatment.

Though several studies have assessed the existence of atherosclerosis risk factors with subclinical atherosclerosis in younger adults [5], no adequate study has evaluated the relationship between premature atherosclerosis and MetSyn in young adults [6].

We therefore assessed the association of the MetSyn on the basis of definitions by the National Cholesterol Education Program (NCEP) with premature CAD regarding the impact of sex in young adults with MetSyn on CAD.

Material and methods In an analytic cross-sectional study, 940 patients (553 women aged \( \leq 55 \) years and 387 men aged \( \leq 45 \) years) selected from patients undergoing coronary angiography
Correlation between ABO blood groups, major risk factors, and coronary artery disease

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Received 12 June 2005; accepted 25 June 2005
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Abstract

To investigate a possible association of ABO blood groups with coronary artery disease in well-documented patients, we designed a cross-sectional study of 2026 patients, known case of coronary artery disease in angiography, who underwent coronary artery bypass graft at Tehran Heart Center, with regard to coronary artery disease major risk factors as well as ABO blood groups. Analysis did not show any significant difference between the frequency of ABO blood groups in coronary artery disease patients compared to the Iranian general population. In addition, frequency of cardiac risk factors was similar in coronary artery disease patients with different blood groups. Therefore, these finding suggest that there is no correlation between various ABO blood groups and development of coronary artery disease. Moreover, the prevalence of major risk factors was equal in patients with different blood groups, and blood groups had no impact on development of premature coronary artery disease in individual subjects.

Keywords: ABO blood groups; Atherosclerosis; Coronary artery disease; Cardiac risk factors

1. Introduction

Myocardial infarction usually occurs due to a thrombotic coronary occlusion at the site of a ruptured or erosive atherosclerotic plaque. Atherosclerotic coronary artery disease is the main cause of death in adults in most countries. Studying different risk factors affecting development of atherosclerosis leads us to more efficient ways for preventing coronary artery disease (CAD).

During the last few decades several reports have suggested that ABO blood groups, in particular non-O blood groups, are associated with the risk of ischemic heart disease and of developing severe manifestations of atherosclerosis [1,3–7]. Results from the Farmingham study and several other reports indicated that the incidence of ischemic heart disease may be higher in subjects of blood group A or its subgroups. Stakisaitis found that the B blood group may be related to coronary atherosclerosis in Lithuanian women. In apparent contradiction, Mitchell showed that towns with a higher prevalence of blood group O had higher rates of cardiovascular mortality [7]. It was suggested that cardiovascular disease might be more lethal in subjects with blood group O.

Herein, we report a study on the distribution of ABO blood groups in a series of patients who underwent coronary artery bypass grafting (CABG) at Tehran Heart Center in order to evaluate whether ABO blood groups are associated with an increased risk of developing coronary artery disease and to discover any difference in prevalence of major cardiac risk factors, i.e. hypertension, smoking, diabetes mellitus and hypercholesterolemia among documented CAD patients with different ABO blood groups.

2. Patients and methods

This series includes 2026 patients, 1512 males (75.4%) and 494 females (24.6%) with a mean age of 59 years who
CASE REPORT

New technique: repositioning of dislodged atrial pacing lead with a specially designed urological basket

Ahmad Yamini Sharif*, Gholamreza Davoodi, Ali Kazemi Saeed, and Saeed Sadeghian

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Received 10 March 2006; accepted after revision 3 October 2006

The rate of dislodgement of atrial pacing leads is ~3%. To solve this problem, reoperation and repositioning of these leads is one of the solutions. Some operators have reported repositioning these leads with snare systems or deflectable catheters. In this communication, we present a new method using a specially designed urological basket to solve this problem.

KEYWORDS
Atrial pacing lead; Dislodgement; Urological basket

Introduction

Lead dislodgement requiring reoperation is a complication that raises the costs of pacemaker implantation surgery, while adding to patient discomfort. Migration of a dislodged lead can cause complications such as undersensing, loss of atrial capture, and loss of atrial function in patients who need AV synchrony. Once detected, the dislodged lead should immediately be repositioned.1,2

In recent years, percutaneous transcatheter repositioning of displaced permanent pacemaker leads has been advocated before consideration of standard repositioning by reopening the generator pocket. The procedure is easy and safe, allowing a reduction of the need for surgical lead revision and the associated morbidity and cost.3–5 In this report, we introduce a method with a specially designed urological basket to solve this problem in two patients.

Case 1

A 68-year-old man was admitted in January 2006 with dyspnoea, mild dizziness, and evidence of pacemaker malfunction due to atrial lead dislodgement. He had a history of coronary bypass surgery in 1985 and angioplasty (implantation of seven stents in two stenotic saphenous vein grafts) in 2003. In 2004, he experienced an inferior MI, after which he had transient complete heart block accompanied by respiratory arrest and cardiogenic shock, which was treated medically and the block resolved. In the next admission (4 months later) he had first-degree atrioventricular block and also had episodes of complete heart block accompanied by dizziness and exacerbation of dyspnoea. Electrocardiogram showed narrow complexes and old inferior MI. In the latest echocardiographic study ejection fraction was 40% and there was no evidence of significant dysynchrony; we therefore decided to implant a dual chamber pacemaker.

The implantation was successful, and the patient was discharged in good condition in November 2005. At follow-up, pacemaker analysis showed no atrial sensing and pacing. Programming the pacemaker to VVIR mode did not relieve symptoms, and the patient was scheduled for repositioning of atrial lead, which was performed with this specially designed urological basket in February 2006.

Further description of specially designed urological basket (cardiac pacing lead hook)

This device is specially designed based on the non-metallic urological stone basket known as the Dormia basket that is used for removal of stones that are located in the ‘lower ureter’.

By making changes, its function is altered so that instead of forming a basket, the operator can form a hook around the cardiac pacing lead by pulling the steerable inner line of the device. (Figure 1A–C).

In the next step the operator is able to reposition the lead by traction on the device.

To remove the hook, the operator releases the inner line; this will allow the hook to be straightened as it enters again into the delivery system (Mullins sheath).

Methods

To perform repositioning of the atrial pacing lead, the patient was brought to the catheterization laboratory in the post-absorptive...
Preoperative Carotid Artery Screening in Patients Undergoing Coronary Artery Bypass Graft Surgery

Shapour Shirani, Mohammad Ali Boroumand, Seyed Hesameddin Abbasi, Negar Maghsoodi, Majid Shakiba, Abbasali Karimi, Saeed Davoodi, and Maryam Esfandbod

Tehran Heart Center, Tehran University of Medical Sciences, Tehran, Iran
National Iranian Oil Company (NIOC) Central Hospital, Tehran, Iran
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Background. The incidence of stroke is 2.1—5.2% in bypass surgery patients with a mortality of 0—38%. This study was designed to evaluate the incidence of significant carotid artery stenosis and its related risk factors in candidates for coronary artery bypass graft (CABG) surgery.

Methods. One thousand forty five consecutive candidates for CABG underwent carotid artery Doppler examination in a prospective study. The relation of age, sex, smoking and diabetes history, as well as lipid profile with carotid stenosis, was evaluated.

Results. In 1045 CABG candidates with a mean age of 60 years, prevalence of significant carotid stenosis (>60%) was 6.9%. In the patients aged 65 years and older, the rate of significant stenosis was 12.5%. Age >50 years, female gender, hypercholesterolemia and diabetes mellitus are independent risk factors for significant carotid stenosis.

Conclusions. Significant carotid stenosis has an earlier appearance in our study. Cost-effectiveness studies are recommended for revising the previous screening protocols. © 2006 IMSS. Published by Elsevier Inc.

Key Words: Carotid Doppler, CABG, Carotid artery screening, Carotid stenosis.

Introduction

Excluding intraoperative death, stroke is the most dreaded perioperative complication in patients undergoing coronary bypass surgery. The incidence of stroke is 2.1—5.2% in bypass surgery patients with a mortality of 0—38% (1).

Shedding debris from carotid or aortic atherosclerotic plaques, embolization of the intracardiac clot and a decrease in perfusion pressure to <60 mmHg are the etiologic causes of stroke associated with bypass surgery (2). Carotid stenosis can be diagnosed and managed preoperatively. Therefore, several studies recommend preoperative carotid screening in all bypass candidates (3,4). However, some others recommend it only in high-risk patients. The stated risk factors are >65 years of age (1), carotid bruit on physical examination (1,5,6), female gender, previous cerebrovascular accident or transient ischemic attack, peripheral vascular stenosis (1,7,8), hypertension (1), left main coronary stenosis, history of smoking (7,8), and diabetes mellitus (7). This study is designed to reevaluate the prevalence of significant carotid artery stenosis and its pertaining risk factors among patients who should undergo coronary bypass surgery.

Materials and Methods

In June 2004—May 2005, carotid Doppler study was performed on all patients (n = 1,045) referred to Tehran Heart Center (a university referral center) for coronary bypass surgery. Carotid Doppler was done by an expert radiologist who had been practicing Doppler studies on a daily basis for >5 years. The device used was a Toshiba Eccoece with...
Injection of botulinum toxin before pneumatic dilatation in achalasia treatment: a randomized-controlled trial

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SUMMARY

Background
Pneumatic dilatation is the first line therapy in achalasia, but half of patients relapse within 5 years of therapy and require further dilatations.

Aim
To assess whether botulinum toxin injection before pneumatic dilatation is superior to pneumatic dilatation alone in achalasia patients.

Methods
Newly diagnosed achalasia patients were randomly assigned to receive botulinum toxin 1 month before pneumatic dilatation (botulinum toxin-pneumatic dilatation group: 27 patients with median age of 38) or to undergo pneumatic dilatation alone (pneumatic dilatation group: 27 patients with median age of 30). Response to therapy was assessed by clinical and objective methods at various intervals.

Results
One-year remission rate of patients in botulinum toxin-pneumatic dilatation group was 77% compared with 62% in pneumatic dilatation group ($P = 0.1$). In pneumatic dilatation group, the oesophageal barium volume significantly ($P < 0.001$) decreased at 1 month, but this reduction did not persist over 1-year follow-up. Botulinum toxin-pneumatic dilatation group showed a significant ($P < 0.001$) reduction in barium volume at the various times intervals post-treatment. In the botulinum toxin-pneumatic dilatation group, 10/11 (91%) patients over 40 were in remission at 1 year, comparing with only five of nine (55%) cases in pneumatic dilatation group ($P = 0.07$).

Conclusion
Injection of botulinum toxin before pneumatic dilatation does not significantly enhance the efficacy of pneumatic dilatation.

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Involvement of endogenous opioid peptides and nitric oxide in the blunted chronotropic and inotropic responses to β-adrenergic stimulation in cirrhotic rats

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Keywords
β-adrenergic receptor, bile duct ligation, cardiomyopathy, cirrhosis, endogenous opioid peptides, nitric oxide

ABSTRACT

It is well known that chronotropic and inotropic responses to β-adrenergic stimulation are impaired in cirrhosis, but the exact reason is not clear. Considering the inhibitory effect of endogenous opioid peptides and nitric oxide (NO) on β-adrenergic pathway, we examined their roles in hyporesponsiveness of isolated atria and papillary muscles to isoproterenol stimulation in cirrhotic rats. Cirrhosis was induced by chronic bile duct ligation. Four weeks after ligation or sham operation, the responses of the isolated atria and papillary muscles to isoproterenol stimulation were evaluated in the absence and presence of naltrexone HCl (10⁻⁶ M), N(ω)-nitro-L-arginine methyl ester (L-NAME, 10⁻⁴ M), and naltrexone plus L-NAME in the organ bath. Considering the role of inducible NOS (iNOS) in hemodynamic abnormalities of cirrhotic rats, the chronotropic and inotropic responses of cirrhotic rats to isoproterenol stimulation were also assessed in the presence of aminoguanidine (a selective inhibitor of iNOS, 3 × 10⁻⁴ M). Sham operation had no significant effect on basal atrial beating rate, contractile force, and maximal time derivatives for the development and the dissipation of papillary muscle tension. The basal atrial beating rate of cirrhotic rats did not show any significant difference compared with the sham-operated ones; however, the basal contractile parameters were significantly decreased in cirrhosis. Although the maximum effects of isoproterenol on chronotropic and inotropic responses were significantly reduced in cirrhotic rats, there was no difference in half-maximal effective concentrations of isoproterenol in these concentration–response curves. The basal abnormalities and the attenuated chronotropic and inotropic responses to isoproterenol were completely corrected by the administration of naltrexone, L-NAME and aminoguanidine. Concurrent administration of naltrexone and L-NAME also restored to normal the basal abnormalities and the blunted responses to isoproterenol in cirrhotic rats, and did not show any antagonistic effect. Based on these findings, both the endogenous opioid peptides and NO may be involved in the attenuated chronotropic and inotropic responses to β-adrenergic stimulation in cirrhosis. It seems that the iNOS activity results in NO-induced hyporesponsiveness to β-adrenergic stimulation in cirrhosis.
Pentoxifylline Improves Reoxygenation-induced Contractile Recovery Through a Nitric Oxide-dependent Mechanism in Rat Papillary Muscles

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Abstract: In this study, the protective effect of pentoxifylline against hypoxia-reoxygenation injury and the possible involvement of nitric oxide (NO)-mediated pathways in this protection were investigated in isolated rat papillary muscles. Papillary muscles were excised and isolated in Krebs–Henseleit solution aerated with 95% O₂ and 5% CO₂. Hypoxia was simulated by substituting O₂ with argon. Three sets of experiments, testing 30, 60, and 90 min of hypoxia, were performed. The effects of different pentoxifylline concentrations on papillary muscle contractile parameters and responsiveness to isoproterenol were assessed. To investigate the role of NO, N(ω)-nitro-L-arginine methyl ester was added before pentoxifylline treatment. Pentoxifylline did not show any inotropic effect on papillary muscles. Hypoxia caused a profound depression of contractile parameters, which was not affected by pentoxifylline treatment. Reoxygenation resulted in significant partial recovery of contractile parameters after 30 and 60 but not 90 min of hypoxia. In experiments with 30 and 60 min of hypoxia, reoxygenation-induced contractile recovery and responsiveness to isoproterenol were improved by pentoxifylline in a concentration-dependent fashion. These functional improvements were completely blocked by N(ω)-nitro-L-arginine methyl ester pretreatment. No improvement was observed in 90-min hypoxia experiment. In conclusion, pentoxifylline improved contractile recovery during reoxygenation and postreoxygenation responsiveness to ß-adrenergic stimulation through the NO-dependent mechanism.

Key Words: contractility, hypoxia/reoxygenation, nitric oxide, pentoxifylline

C**ardiovascular effects of pentoxifylline have been studied extensively.**1–3 However, its actions in this system are still controversial. Some studies have shown that pentoxifylline results in vasodilation and tachycardia besides its positive chronotropic and inotropic effects,3 whereas other studies have failed to show these effects.2,4 Modulations of vagal and vasomotor centers in the brainstem, peripheral cardiovascular system, and either direct or reflex release of catecholamines have also been suggested as mediating pentoxifylline’s diverse cardiovascular effects.3

Pentoxifylline exerts anti-inflammatory and antioxidant effects through inhibition of neutrophil activation and production of inflammatory mediators, as well as scavenging free oxygen radicals under pathological circumstances.5,6 It increases nitric oxide (NO) production and intracellular cGMP level by the stimulation of endothelial NO synthase and inhibition of phosphodiesterase activity, respectively.7–9 The involvement of NO-mediated pathways in the protective effect of pentoxifylline against ischemia-reperfusion injury in gastrointestinal tissue has been shown.10 Its anti-inflammatory, antioxidant, and phosphodiesterase inhibitory effects (increasing cellular levels of cAMP)11 have caused it to be suggested as a potential cardioprotective agent in ischemia-reperfusion injury,12–15 but there are also disagreements on this aspect of its action. Some previous in vivo studies have shown that pentoxifylline reduces leukocyte sequestration,16 preserves endothelial function,16 limits myocardial injury (assessed by loss of enzymes and ST segment elevation),15,17 and improves functional recovery during the postischemic period.12 No reduction in infarct size has been reported in other studies.4 Although the mechanisms of these discrepancies are not clear, methodological differences, which are inherent in in vivo studies, may be involved.

For many years, the model of isolated papillary muscle, which enables strict control of experimental conditions, has been used to examine the role of specific substances on myocardial function in different physiological or pathological conditions. Therefore, we investigated the effect of pentoxifylline on contractility, protection against hypoxia-reoxygenation injury, and postreoxygenation responsiveness to ß-adrenergic stimulation in isolated rat papillary muscles. Moreover, considering the cardioprotective effect of NO against
The Effect of Gender on the Pharmacokinetics of Verapamil and Norverapamil in Human

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ABSTRACT: The effects of gender on the pharmacokinetics of verapamil and its active metabolite, norverapamil, following single oral dose (80 mg, Isoptin) to 12 healthy male (mean age: 25.75 ± 2.42 years, mean body weight: 70.59 ± 9.94 kg) and 12 healthy female subjects (mean age: 24.08 ± 2.84 years, mean body weight: 56.67 ± 5.23 kg) were investigated in the present study. Plasma concentrations of verapamil and norverapamil were analysed using a modified high-pressure liquid chromatography method. Pharmacokinetic parameters were calculated by non-compartmental analysis for each subject. For verapamil the half-life (t1/2) and mean residence time (MRT) were significantly shorter in women than men (p<0.01 and p<0.05, respectively). For other pharmacokinetic parameters of verapamil there were no significant differences between males and females. For norverapamil, t1/2, MRT and time to reach to the maximum plasma concentration (Tmax) showed statistically significant differences between the two genders. The AUC0-24 and AUC0-1 ratios of norverapamil to verapamil were also calculated. The ratios were significantly higher in women compared with men. These observations indicate that the elimination rate of verapamil is faster in women than men which may be attributed to the higher activity of CYP3A4 or lower activity of P-glycoprotein in women compared with men. A contribution of both factors in the appearance of gender differences in verapamil pharmacokinetics is also possible. Copyright © 2006 John Wiley & Sons, Ltd.

Key words: gender; verapamil; norverapamil; pharmacokinetics

Introduction

Since gender related differences in pharmacokinetics have frequently been considered as potentially important determinants for the clinical effectiveness of drug therapy, the number of studies in this subject is increasing.

The mechanistic process underlying gender-specific pharmacokinetics can be divided into molecular and physiological factors. Major molecular factors involved in drug disposition including drug transporters (P-glycoprotein) and drug metabolizing enzymes (cytochrome P450 isoenzymes) have been shown to be influenced by gender [1–3].

Verapamil is a calcium ion influx inhibitor, having antiarrhythmic, antianginal and antihypertensive properties [4]. Verapamil undergoes extensive first-pass metabolism and is both a cytochrome P450 and P-glycoprotein substrate [3], so it is expected that the pharmacokinetic parameters may be different between the two genders. The results of previous studies investigating the gender effect on verapamil pharmacokinetics are inconclusive [5–10]. Therefore we intended to further study the effects of gender on

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ABSTRACT

Investigation of Effectiveness of Chitosan Hydrogel to Stop Bleeding and Air Leakage from Lung Fistula: An In Vivo Study

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Chitosan is the most important derivative of chitin, the second most abundant biopolymer just after cellulose, which has received great attention because of its unique characteristics. Without doubt, its biomedical usages have gained more importance among the vast variety of chitosan applications owing to its good biocompatibility and biodegradability. In recent years, particular interest has been devoted to chitosan hydrogels as a promising alternative in competition with conventional sutures or bioadhesives. In the current work, we have investigated the effectiveness of chitosan hydrogel to stop bleeding and air leakaging of lung fistula. Polycationic chitosan was obtained with solubilization of chitosan powder in aqueous acidic media. Different parameters such as acid type and concentration, and degree of deacetylation (DD%) of chitosan, were altered to modify hydrogel properties including viscosity, pH, cohesive strength, and tissue bioadhesiveness. In vivo experiments have been conducted on sheep models which provide a convenient way to evaluate the efficacy of prepared samples. The lung was punctured in distinctive geometries and hydrogel then injected on. Bioadhesive strength as well as irritant effects were discussed. Samples with higher degree of deacetylation, including Chs-16 (DD% = 99, MW=230,000) and Chs-19 (DD% = 98, MW=300,000) that were dissolved in lactic media showed best sealing effect. Further studies are now conducted to optimize the sealing properties of chitosan based hydrogels.

INTRODUCTION

Chitin, the second most abundant natural polymer next to cellulose, is the nitrogen-containing member of the great family of polysaccharides. It extracts from fungal cell wall and exoskeleton of arthropods such as insects, crabs, shrimps, and lobsters [1]. The chemical structure of chitin has been shown in Figure 1a. The poor solubility of chitin has limited its applicability hence, one must chemically modify amide groups of the main backbone to produce poly [(1→4)-2-amino-2-deoxy-D-glucopyranose] which has been known as chitosan (Figure 1b). Chitosan is soluble in aqueous acidic media due to presence of amine functionalities. Moreover, chitosan is the biodegradable, biocompatible, and...
Effect of Physical Fitness on the Coagulant Activity of Healthy Young Men

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Abstract: Effects of exercise on different body systems, especially cardiovascular and musculoskeletal systems have been proven. In the haemostatic system the influence of training has been extensively studied but there are few investigations that analyze the effects of training programs on coagulation factors. In this study we have surveyed the effect of physical fitness on coagulation factors in healthy young men. Subjects were 26 young men without any history of cardiac, coagulation or respiratory problems in themselves or their immediate family, a cardiologist confirmed their cardiovascular health. These men were divided in two groups, the physically active group (Ac) and the sedentary group (Sc). The groups were similar in lifestyle except their activity. The physically active men (Ac; n=10) were involved in regular exercise at least three times a week during the last six months. The sedentary men (Sc; n = 16) did not participate in any sport activity. According to preliminary clinical examinations, Anthropometric variables had no significant differences in either group, but the Bruce test and a standardized ergometry test proved that functional capacity of cardiovascular system in the Ac group is significantly higher than the Sc group. Blood data analysis showed that the basal levels of FVIII:c and FIX:c were significantly higher in the Ac group. FVIII:c, FIX:c, fibrinogen and vWF:ag increased in response to exercise while vWF:ag, FVII:c and aPTT decreased significantly. All of these parameters, except fibrinogen, FVIII:c and vWF:ag, returned to resting values during passive recovery. In the Sc group elevation in vWF:ag during active recovery, reduction of aPTT and elevation of FVIII:c and FIX:c during passive recovery was statistically significant. Active and sedentary young men are different in resting values of some coagulation factors and their coagulation markers also vary in response to a submaximal exercise program on cycle ergometer. This is due to the difference between physical fitness levels of these two groups. Considering the unfavorable effects of imbalance between coagulation and fibrinolysis, it seems that any type of physical activity especially sport activities the haemostatic balance should be evaluated. Controlling the markers of these systems will help us improve safety of patients in whom exercise is a part of their rehabilitation program, this way it will be possible to enhance positive effects and reduce the possible risks of professional sports for healthy individuals.

Key words: Physical fitness-cycle ergometer-coagulation-FVIII-submaximal exercise

INTRODUCTION

Effects of exercise on different body systems, especially cardiovascular and musculoskeletal systems have been proven and exercise tests are used to diagnosis different cardiovascular and pulmonary diseases (James et al., 1980). Increased understanding of thrombotic mechanisms enables clinicians to predict risk more accurately and increase the scope for target prevention (Laffan and Tuddenham, 1998).

Haemostasis and its exercise-induced changes have been studied by many investigators. Industrialization in developing countries has led to a sedentary lifestyle and ultimately a rise in cardiovascular disorders (Ikaragui et al., 1999). In most of these cases unwanted clot formation is the main etiology whereas in others bleeding is the problem. Although there is controversy in parameters, regular physical exercise programs are the main part of long-term treatment in many of these diseases, including Myocardial Infarction (MI) and Cardio Vascular Accident (CVA) (Ikaragui et al., 1999, Van Den Berg et al., 1997, Lin et al., 1999, Rankinen et al., 1995, Möckel et al., 2001; Prisco et al., 1998; Wang et al., 1995 and Hansen et al., 1990). For bleeding disorders such as

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2032
A NOVEL SCORING SYSTEM FOR IDENTIFYING HIGH-RISK PATIENTS UNDERGOING CAROTID STENTING


Background/Objective: In patients with severe concurrent coronary and carotid artery disease, two different treatment strategies may be used: simultaneous endarterectomy and coronary bypass surgery, and carotid stenting with delayed coronary bypass surgery after a few weeks. To evaluate the safety and efficacy of carotid stenting with delayed coronary bypass surgery after a few weeks in patients referred to Tehran Heart Center, Tehran, Iran and to determine the independent predictors that may be used to identify the appropriate treatment plan for such patients.

Methods: This prospective study was performed from December 2003 through October 2004. Symptomatic patients with >60% stenosis and asymptomatic patients with >80% stenosis were included in this study. The risks and benefits of carotid stenting were explained. Patients were excluded from the study if any of the following was applicable: age ≥ 85 years, history of a major stroke within the last week, pregnancy, intracranial tumor or arteriovenous malformation, severely disabled as a result of stroke or dementia, and intracranial stenosis that exceeded the severity of the extracranial stenosis. Thirty consecutive patients who underwent carotid stenting were enrolled in this study.

Results: The mean ± SD age of patients was 66.3 ± 8 years. The procedural success rate was 96.7%. During a mean ± SD follow-up period of 5.6 ± 3.2 months, 4 (17%) deaths occurred; none of which were attributed to a neurologic causes. Moreover, 1 (3%) patient developed a minor nonfatal stroke with transient cognitive disorder. Most of patients (80%) with major complications acquired a score of ≥26.

Conclusion: To reduce the rate of carotid stenting complications in high-risk patients with heart disease, to optimize the patient selections, and to determine the best treatment strategy, based on the clinical and lesion characteristics of patients, we proposed a new scoring system.

Keywords: Carotid arteries • carotid endarterectomy • carotid stenting • scoring system

Introduction

Carotid and coronary artery occlusive disease frequently coexist as part of the systemic atherosclerotic process. Carotid artery stenosis increases the risk of perioperative stroke in patients undergoing coronary artery bypass grafting (CABG). The management of severe coexisting disease poses a major dilemma. Surgical revascularization of one vessel is associated with an increased rate of complication in the others. Staged and simultaneous surgeries of both vascular territories in these patients have been practiced at the expense of significant morbidity and mortality, mainly due to myocardial infarction and/or stroke. Percutaneous elective carotid artery stenting (CAS) has been shown to be effective in treating severe occlusive carotid artery disease and may have its greatest benefit in patients with a high preoperative risk. However, the clinical and anatomic heterogeneity...
SIRENOMELIA WITH AGENESIS OF CORPUS CALLOSUM

Shapour Shirani MD*, Vahab Rekabi MD**, Naser Kamalian MD**

Sirenomelia is a very rare anomaly presented with fusion of the lower limbs. Genitourinary, neural tube, and vertebral anomalies are found in most cases. We report a case of sirenomelia with agenesis of corpus callosum, which has not been reported previously.

Keywords: Corpus callosum • mermaid • sirenomelia

Introduction

Sirenomelia (mermaid syndrome) is a rare anomaly of caudal region of the body, presented with fusion of the lower limbs. Renal agenesis, imperforated anus, as well as vertebral and neural tube defects have association with this ailment. Herein, we report a patient with sirenomelia and agenesis of corpus callosum.

Case Report

A 23-year-old pregnant nulliparous woman was referred to our hospital for ruling out intrauterine growth retardation of her fetus. The maternal medical and obstetric histories were uneventful, as well as the family history. She had a nonfamilial marriage. The ultrasonography was performed at 27 weeks of gestation, revealing oligohydramnios, opposition of lower extremities, agenesis of kidneys and bladder, and gross disparity between the biparietal diameter and the femoral length. The head circumference was 25 cm and crown-rump length was 30 cm, with an estimated weight of 825 g. The diagnosis of mermaid syndrome was made and the pregnancy was terminated for presence of congenital malformations incompatible with life. The fetus was evaluated by spiral computerized tomography (CT) scan and magnetic resonance imaging (MRI), after evacuation of the uterus. The fetus had Potter facies, imperforated anus, ambiguous external genitalia, single umbilical artery, and total fusion of the hypoplastic lower extremities. Both legs were in supination. The fetus had eight rudimentary fingers (Figure 1). The spiral CT scan revealed left fibular hemimelia and fused maldeveloped pubis bone. The ribs, scapulae, clavicles, and dorsal vertebrae were normal (Figure 2). The MRI showed that the lateral ventricles were separated by an abnormally high third ventricle, compatible with agenesis of corpus callosum (Figure 3). The kidneys, urinary bladder, and the internal genitalia were also absent. Karyotyping was not possible, since the fetus was immersed in formalin immediately after termination of pregnancy. The parents did not consent to autopsy the fetus.

Figure 1. Mermaid fetus, showing fused lower limbs, rudimentary foot, and deformed ears.
Results of the Repair of Aortic False Aneurysm


Aortic false aneurysm is a rare complication of surgery of the aorta that can occur several months to years after the initial operation. We reviewed our results with false aneurysm repair using deep hypothermia and circulatory arrest.

Three patients were reoperated for false aneurysm of the ascending aorta. Femorofemoral cardiopulmonary bypass with a heparinized system was used in all patients. Hypothermic circulatory arrest at an average temperature of 20°C was instituted in all patients for repair. Two patients had a patch repair with pericardium, and the other one had primary repair of the defect.

All patients had false aneurysms in the ascending aorta at the site of a previous aortotomy. Two patients had proven infection as the cause. The mean cardiopulmonary bypass time was 183 ± 20 minutes, and the mean circulatory arrest time was 35 minutes. Operative mortality was not seen.

The mean time for extubation in survivors was 10 – 12 hours, and the average time to discharge was 26 days.

Aortic false aneurysms can be safely approached using femorofemoral cardiopulmonary bypass, hypothermic circulatory arrest, and patch repair with acceptable operative mortality and long-term survival.

Keywords: Ascending thoracic aorta • cardiopulmonary bypass • false aneurysm

Introduction

Aortic false aneurysms are rare complication of surgical manipulation of the aorta occurring in less than 0.5% of the patients undergoing cardiac surgery. Numerous etiologic entities have been associated with this complication such as patch repair of coarctation of the aorta, graft infection or mediastinitis, poor anastomotic techniques, and poor aortic wall tissue. Aortic pseudoaneurysms or false aneurysms are the result of disruption of at least one layer of the wall of the vessel and contained the remaining vascular layers supported by the surrounding structures of the mediastinum. Pseudoaneurysm of the ascending aorta can present as a pulsatile suprasternal mass, evidence of myocardial ischemia as a result of compression of coronary artery bypass grafts, dysphagia, and stridor. Patients usually present with general symptoms of fatigue and weight loss.

The approach to these patients depends on the site and size of the false aneurysm. Numerous reports have been published about the repair of aortic false aneurysm in the abdominal aorta, but very few studies have reported the successful repair of the thoracic aorta. We describe our results of surgical repair of false aneurysm of the thoracic aorta using cardiopulmonary bypass (CPB), deep hypothermia, and circulatory arrest.

Case Report

Three patients were retrospectively reviewed for reoperations for false aneurysm of the
Effects of tranexamic Acid and autotransfusion in coronary artery bypass.

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The aim of this study was to compare the effects of intraoperative autotransfusion and tranexamic acid on postoperative bleeding and the need for allogeneic transfusion. In a prospective randomized study, 200 patients undergoing coronary artery bypass were divided into two groups: 100 patients received 1-2 units of autologous blood after termination of cardiopulmonary bypass; and 100 patients were given tranexamic acid 15 mg.kg(-1) before injection of heparin and again before injection of protamine. Postoperative bleeding was significantly lower in the tranexamic acid group (600 mL) than the autotransfusion group (1,100 mL). The percentage of patients transfused in the autotransfusion and tranexamic acid groups was 70% and 65%, respectively. Patients in the autotransfusion group received significantly more whole blood (2.82 vs 1.93 units). Intensive care and hospital stays were shorter in the tranexamic acid group. There was no hospital mortality and no difference in thrombotic complications between groups. Tranexamic acid was more effective than autotransfusion in reducing postoperative blood loss and allogeneic transfusions after coronary bypass.

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Comparison of outcomes of percutaneous coronary intervention on proximal versus non-proximal left anterior descending coronary artery, proximal left circumflex, and proximal right coronary artery: A cross-sectional study

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Abstract

Background: Previous studies have shown that lesions in proximal left anterior descending coronary artery (LAD) may develop more restenosis after balloon angioplasty than lesions in other coronary segments. However, stenting seems to have reduced this gap. In this study, we compared outcomes of percutaneous coronary intervention (PCI) on proximal LAD versus proximal left circumflex (LCX) or right coronary artery (RCA) and proximal versus non-proximal LAD.

Methods: From 1737 patients undergoing PCI between March 2004 and 2005, those with cardiogenic shock, primary PCI, total occlusions, and multivessel or multi-lesion PCI were excluded. Baseline characteristics and in-hospital outcomes were compared in 408 patients with PCI on proximal LAD versus 133 patients with PCI on proximal LCX/RCA (study I) and 244 patients with PCI on non-proximal LAD (study II). From our study populations, 449 patients in study I and 549 patients in study II participated in complete follow-up programs, and long-term PCI outcomes were compared within these groups. The statistical methods included Chi-square or Fisher’s exact test, student’s t-test, stratification methods, multivariate logistic regression and Cox proportional hazards model.

Results: In the proximal LAD vs. proximal LCX/RCA groups, smoking and multivessel disease were less frequent and drug-eluting stents were used more often (p = 0.01, p < 0.001, respectively). Patients had longer and smaller-diameter stents (p = 0.009, p < 0.001, respectively). In the proximal vs. non-proximal LAD groups, multivessel disease was less frequent (p = 0.05). Patients had larger reference vessel diameters (p < 0.001) and were more frequently treated with stents, especially direct stenting technique (p < 0.001). Angiographic success rate was higher in the proximal LAD versus proximal LCX/RCA and non-proximal LAD groups (p = 0.004 and p = 0.05, respectively). In long-term follow-up, major adverse cardiac events showed no difference. After statistical adjustment for significant demographic, angiographic or procedural characteristics, long-term PCI outcomes were still similar in the proximal LAD versus proximal LCX/RCA and non-proximal LAD groups.

Conclusion: Despite the known worse prognosis of proximal LAD lesions, in the era of stenting, our long-term outcomes were similar in patients with PCI on proximal LAD versus proximal LCX/RCA and non-proximal LAD. Furthermore, we had better angiographic success rates in patients with PCI on proximal LAD.
Case Report

Intimal Sarcoma of the Descending Aorta

Shapour Shirani MD PhD*, Maryam Soleymanzadeh-Ardabili MD**, Mitra Arami MD***

Primary intimal angiosarcoma of the aorta (i.e., mostly intraluminal sarcomas with evidence of endothelial differentiation) is extraordinarily rare. We report a case in which the diagnosis was accurately made using immunohistochemistry in an embolectomy specimen. The patient was a 78-year-old man with a two-month history of bilateral claudication. Doppler ultrasound proved an embolus in both popliteal arteries, which was removed. The highly atypical cells comprising these emboli were positive immunohistochemically for CD68, vimentin, and CD31. Magnetic resonance imaging also showed an irregular tumor (invasion to the left main bronchus). This case emphasizes the need for a wide panel of immunohistochemical studies in tumor emboli of unknown origin.

Keywords: Aorta • angiosarcoma • CD31 • immunohistochemistry

Introduction

Intimal sarcoma of the aorta is a very rare, but aggressive tumor. It is mostly accompanied with embolic phenomena. En-bloc resection with postoperative chemo-radiation therapy is its treatment, but in most cases, the prognosis is still dismal. Herein, we report a case of aortic angiosarcoma presented with bilateral popliteal thromboemboli.

Case Report

A 78-year-old heavy-smoker man was admitted to our center for further evaluation of cardiovascular malignancy. He had a history of bilateral claudication in the past two months. He had cold lower extremities with absence of pulses in the popliteal, tibialis posterior, and dorsalis pedis arteries two days before his first hospital admission. Doppler ultrasound of the lower extremities revealed bilateral popliteal artery thrombosis. Bilateral popliteal embolectomy was performed. The pathological study of the embolectomized material showed some spindle to ovoid cells with severe nuclear pleomorphism and hyperchromasia accompanied by multinucleated giant cells, with myxoid background. The immunohistochemical study was positive for CD68, vimentin, and CD31 and negative for CD34 and CKA1/3 markers. All these findings were compatible with a diagnosis of intimal angiosarcoma. In our center, echocardiography revealed a mild diastolic dysfunction with aortic valve calcification. There was no evidence of tumor in the cardiac chambers. An irregular tumoral mass was found in the descending aorta by magnetic resonance imaging (MRI) (Figure 1A). The mass had invasion to the left bronchus (Figure 1B) with heterogeneous enhancement after contrast injection (Figure 2). Considering the extensive tumoral involvement, chemo-radiation therapy was started. The patient refused to receive the treatment and died of multi-organ failure after two months.

Discussion

There are two types of aortic sarcomas; intimal and mural sarcomas. Intimal sarcoma may cause
Hemodynamic performance of the aortic prosthesis by stress echocardiography

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Chirurgia 2006 19:6 (427-430)

Aim. To study the effect of prosthetic aortic valve size on hemodynamic performance at rest and after exercise. Methods. Twelve patients (mean age 40.5 years) who had undergone aortic valve replacement (AVR) 61 months ago because of severe aortic stenosis were evaluated. Results. Nine patients received St-Jude and 3 patients received other types of prosthetic valves. Sixty percent of patients had ideal hemodynamic results at rest and peak exercise (group A1), 42% of patients had good hemodynamic results at rest but inappropriate at peak exercise (group A2) and 42% of patients had inappropriate hemodynamic results at rest (group B). Patient annulus index is significantly different between group A1 and B but the difference of annulus index between group A1 and AII has a trend for being significant. Peak gradient and mean gradient increased significantly with exercise. Decreases of effective orifice area, effective orifice area index and performance index were also significant at peak exercise. None of our 12 patients had mismatch at rest, but 6 patients had mismatch at stress. Patient annulus index has a significant correlation with mismatch at peak exercise. Conclusions. According to this study, we may consider aortic root enlargement when the patient annulus index is small.
Case Report

Bifurcating Radial Artery: a Useful Anatomic Variation for Coronary Artery Bypass Grafting

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Abstract

A 56-year-old man with a two year history of chronic stable angina underwent elective coronary artery bypass grafting (CABG) due to angiographic report of three vessel disease and tight stenosis at proximal part of left anterior descending artery (LAD). While harvesting of radial artery (RA), the distal half of radial artery was found to bifurcate to two parallel branches with equal size. We used this as a single conduit to bypass the first and second obtuse marginal (OM) branches. The patient had a smooth post-operative course and uneventful recovery.

Keywords: Coronary artery bypass grafting • Bifurcating radial artery

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Antipsychotic Drugs and Sudden Death

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Abstract

Sudden, unexpected death may occur in apparently healthy individuals. Its occurrence in psychiatric patients has raised the concern that the use of psychotropics, especially antipsychotics, may be associated with an increased risk of sudden death. This concern is maintained even though not all psychiatric patients who have succumbed to sudden death have been on psychotropics. Early reports presented the concern that the use of chlorpromazine and thioridazine were associated with sudden death. More recently, the focus shifted to the more potent agents. Indeed, the FDA Advisory Committee discussed the possibility of a connection between sudden death and haloperidol. No decision could be reached by the FDA Committee because of the enormous complexity of the problem. Nonetheless, since sudden death continues to catastrophically complicate the course of some patients, the scope of this review is to further investigate the relationship between antipsychotic agents and sudden death.

Keywords: Antipsychotic • QT prolongation • Sudden death

There is widespread, serious concern about the hazards of psychotropic medication, particularly sudden death with high doses of antipsychotic (narcoleptic) drugs. This concern follows several reports of unexpected deaths in young people, usually males, where the concurrent prescription of antipsychotic drugs has been implicated. The public perception is that these deaths occur when the medication is used in high dosage in disturbed patients. There is some suspicion of an ethnic bias, with young men of Afro-Caribbean origin being more commonly involved, although no data exist to substantiate this. The death rate among psychiatric patients tends to be higher than that of the general population, but suicide and accidental deaths may account for much of this excess.¹² Sudden, unexpected death is perhaps more common in the general population than might be expected. It has been estimated that between 15–30% of all natural fatalities in the industrially developed world occur suddenly and unexpectedly.¹³,¹⁴ Davies has suggested that there are 50–100 sudden deaths in Britain every year that could be categorized as due to the sudden adult death syndrome, and for which there is no specific explanation.⁵,⁶ Nevertheless, it would seem that the cardiovascular mortality of patients with chronic schizophrenia exceeds that of the general population and the cardiovascular toxicity of neuroleptics may be a contributory factor.

Antipsychotic (neuroleptic) drugs have generally been...
Moderate Mitral Regurgitation and Coronary Disease: Treatment with Coronary Bypass Alone?

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Abstract

Background: In cases of moderate (2 or 3+ on a scale of 0 to 4+) nonorganic mitral regurgitation (MR) and coronary artery disease, operative strategy continues to be debated between coronary artery bypass grafting alone (CABG) or concomitant valve repair. To clarify the optimal management of these patients, we evaluated the mid-term results of isolated CABG in the study group.

Methods: From March 2002 to February 2005, 40 consecutive patients (57.5% male, mean age: 62.45±8.7 years, mean ejection fraction: 44.15±12.6%, mean New York Heart Association class 2.5±0.78) with coronary artery disease and moderate MR without organic mitral valve disease (prolapse, rheumatism, etc.) underwent CABG alone. Thirty one (77.5%) patients had either postoperative or follow-up transthoracic echocardiography with mean follow up time of 10.82±8.12 months. Patient’s pre and postoperative data were compared to evaluate the results of isolated CABG on moderate MR.

Results: MR was ischemic (with persistent wall motion abnormality) in 25 (62.5%) patients and functional (without persistent wall motion abnormality) in 15 (37.5%). Considering postoperative and follow up transthoracic echocardiography, 54.8% had no or mild MR (29% MR 1+, 25.8% no MR) and 45.2% had moderate MR (16.1% MR 3+, 29% MR 2+). Resolution of MR was significant (p<0.001), but it had no correlation with ischemic MR (p=0.46), preoperative ejection fraction (p=0.09), LV systolic (p=0.70) and diastolic dimensions (p=0.80). Seven patients died, 2 in hospital and 5 later.

Conclusion: Although for coronary artery disease accompanying moderate nonorganic MR, CABG alone reduces severity of MR significantly, many patients are left with moderate MR. Preoperative diagnosis of moderate nonorganic MR may warrant concomitant mitral repair.


Keywords: CABG • Echocardiography • Mitral regurgitation

Introduction

Mitral regurgitation (MR) accompanying coronary artery disease (CAD) is a heterogeneous entity. Ischemic MR (IMR) is mitral insufficiency caused by myocardial infarction and associated with a persistent wall motion abnormality.\(^1\) The term IMR excludes rheumatic, degenerative, myxomatous, infective and other organic causes of MR. IMR must be distinguished from organic mitral valve disease with coexisting coronary artery disease, but sometimes it is
The Role of Carotid Artery Screening Before Coronary Artery Bypass Graft Surgery

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Abstract

Background: The incidence of stroke is 2.1-5.2% in bypass surgery patients with a mortality of 0-38%. This study was designed to evaluate the incidence of significant carotid artery stenosis and its related risk factors in candidates for coronary artery bypass graft (CABG) surgery.

Methods: 1045 consecutive candidates for CABG underwent carotid artery Doppler examination in a prospective study. The relation of age, sex, smoking and diabetes as well as lipid profile and carotid stenosis was evaluated.

Results: In 1045 CABG candidates with the mean age of 60 years, the prevalence of significant carotid stenosis (>60%) was 6.9%. In the patients who aged 65 years and older, significant stenosis was 12.5%. Age of 50 years and above, female gender, hypercholesterolemia and diabetes mellitus are independent risk factors for significant carotid stenosis.

Conclusion: Significant carotid stenosis has an earlier beginning in our study. Cost effectiveness studies are recommended for revising the previous screening protocols.


Keywords: Carotid doppler • CABG • Carotid screening.

Introduction

Excluding intraoperative death, stroke is the most dreaded perioperative complication in patients that undergo coronary bypass surgery. The incidence of stroke is 2.1-5.2% in bypass surgery patients with a mortality of 0-38%.1 Shedding debris from carotid or aortic atherosclerotic plaques, embolization of the intracardiac clot and a decrease in perfusion pressure to <60 mmHg are the etiologic causes of stroke associated with bypass surgery.2 The carotid stenosis can be diagnosed and managed preoperatively. Therefore, several studies recommend preoperative carotid screening in all bypass candidates.3, 4 However, some others recommend it only in high risk patients. The stated risk factors are: over 65 years of age,1 carotid bruit on physical examination,1,2 female gender, previous cerebrovascular accident or transient ischemic attack, peripheral vascular stenosis,1,7 diabetes mellitus,4 left main coronary stenosis, history of smoking,2,8 and diabetes

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Comparison of Specifications, Short Term Outcome and Prognosis of Acute Myocardial Infarction in Opium Dependent Patients and Nondependents

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Abstract

Background: The effects of opium dependence on prognosis and short term outcome of patients with acute myocardial infarction (AMI) are not clear yet.

Methods: From March 2004 to August 2004 all male patients admitted with diagnosis of AMI were enrolled. Patients who fulfilled DSM-IV-TR criteria were chosen as opium dependent patients (ODP). Demographic data, risk factors, peak enzyme levels, location of MI, mortality and ejection fraction were collected and analyzed.

We studied the mortality, readmission, functional class, performed revascularizations and coronary angiogram results in a short term follow-up (184 ± 37 days).

Results: A total number of 160 patients were enrolled, of which 45 (28.1%) were opium dependent. In 137 patients 6 months follow up was completed. Duration of admission was higher in O.D.P (11.3 days versus 8.7, P= 0.03) There was no significant difference in age, EF, location of MI, peak enzymes levels, angiographic findings, risk factors (except for cigarette smoking and triglyceride level), in-hospital mortality, need for readmission, 6 months mortality, functional class, and the need for revascularization.

Conclusion: In an unselected cohort of patients admitted with AMI, there was no significant difference in specifications, short term outcome and prognosis of AMI between ODP and nondependents except for duration of hospitalization.

Introduction

Opium dependence is a major public health problem in some parts of the world including our country Iran. Opium has always been the most widely abused substance in Iran. Unlike the pure opioids such as morphine; opium is a complex and variable mixture of substances. Daily amount used both by smoking and by mouth vary from less than 1 gram to
Induced Myocardial Infarction Using Ligation of the Left Anterior Descending Coronary Artery Major Diagonal Branch: Development of an Ovine Model

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Abstract

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 antiarrhythmics were administered. Animals were mechanically ventilated during surgery and stayed in the ICU for 24h afterwards. Experiments were then evaluated by echocardiographic, electrocardiographic, hemodynamic, serologic and morphologic investigations. Echocardiographic measurements were repeated after two months and animals were then sacrificed for postmortem cardiac examinations.

Results: All animals survived the surgical procedure. Cyanotic discoloration and hypokinesia in the cardiac tissue in an area of 3×4 cm plus ST-segment elevations was detected immediately after vessel ligation. Moreover, there were pathologic Q-waves 2 months later. Echocardiographic evaluations revealed an average of 22% relative decrease in cardiac ejection fraction. Wall motion analysis demonstrated anteroapical hypokinesia and akinesia in all animals one day and two months after operation. Thin walled infarcted areas with tissue fibrosis were evident in pathologic investigations two months after surgery.

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

Keywords: Myocardial infarction • Animal models • Sheep • Coronary arteries

Introduction

Today, acute myocardial infarction (MI) is the major cause of mortality in many countries. Using large animal models for cardiovascular research has recently become an issue of interest mainly due to their similarity to human anatomic and physiopathologic characteristics, despite a few drawbacks like substantial resources for housing and care.1-7 Coronary artery ligation to induce myocardial infarction in these models is now considered as a widely used and an attractive method for experimental research because of its clinical relevance.7-12 However, there are only a few published studies describing...
Periodontal Disease as a Risk Factor for Coronary Artery Disease

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Received 26 May 2006; Accepted 4 August 2006

Abstract

**Background:** Coronary artery disease is recognized as one of the three major causes of mortality around the world. The role of inflammation in producing coronary artery disease has been established in previous studies. Since periodontal disease, which is highly prevalent, is considered as a cause of inflammation, its influence on producing coronary artery disease was investigated in the present study considering its four main indices.

**Methods:** In this case-control study, 60 patients with angiographically proven coronary artery disease were selected as case group. After matching for some baseline characteristics including educational level, age, sex, and some established risk factors for coronary artery disease, 60 healthy individuals were selected as control group from a population in whom coronary artery disease had been angiographically ruled out. Then, the existence of periodontal diseases was compared with statistical methods in these two groups, considering four different dental indices.

**Results:** The mean plaque index (PI) was 57.82±2.92% in cases vs. 35.73±2.53% in controls (p<0.05). Mean bleeding on probing (BOP) was 36.3±3.38% in cases versus 18.6±2.6% in controls, while mean Attachment Loss>4mm was 35.14±3.89% and 15.48±2.79% in cases and controls, respectively (P<0.05). The mean loss of teeth (LOT) was not significantly different in cases and controls (5.08±0.52 versus 5.38±0.53, P>0.05). Therefore, except for the number of lost teeth, there was a statistically significant difference between these two groups. For an evaluation of independent variables, multiple logistic regression analysis was used. Odds ratio was 1.02 for attachment loss and 2.2 for BOP.

**Conclusion:** Periodontal diseases may be counted as a risk factor for coronary artery disease and it is essential to study the effects of control and management of these diseases as primary and secondary prevention for coronary artery disease in future studies.

**Keywords:** Periodontal disease • Dental plaque index • Coronary artery disease

Introduction

Periodontal diseases are one of the most common chronic diseases with an infectious origin, which cause inflammatory destruction of periodontal tissues. This condition is caused after contact of periodontium with dental plaques, which contain more than 400 bacterial species. Destruction of periodontium is caused by the release of toxic agents and enzymes from specific species of plaques and host response to bacteria and their products.1 Because of the wide spectrum of microbial plaques associated with, and chronicity of periodontal diseases, presence of local and systemic immune responses, and the development of inflammation, this condition may also affect the course of some systemic
Percutaneous Repositioning of Dislodged Atrial Pacing Lead

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Abstract

The overall rate of atrial pacing lead dislodgement is estimated to be about 3%. These leads are generally repositioned via a second operation through opening the pacemaker pocket. Some operators have introduced percutaneous techniques using snare system or deflectable catheters for this purpose. In this article we present our experience with five cases of percutaneous lead repositioning. Three cases were performed using deflectable ablation catheters and in two cases we used a specially designed urologic basket. The procedural success rate was 100% at the beginning but the long term success rate was 60%.

Introduction

Lead dislodgement requiring reoperation is a complication that raises the costs of pacemaker implantation surgery while adding to patient’s discomfort. Migration of a dislodged atrial lead can present with undersensing, loss of atrial capture, loss of atrial kick in patients who need AV synchrony and rarely phrenic nerve stimulation or improper RV stimulation. Once detected, the dislodged lead should be immediately repositioned.1,2

In recent years, percutaneous transcatheter repositioning of displaced permanent pacemaker leads has been advocated before consideration of surgical repositioning. The procedure is easy and safe, allowing a reduction in the need for surgical lead revision and the associated morbidity and costs.3,4 In this article we introduce five cases of dislodged atrial leads. In three cases we tried repositioning with deflectable ablation catheter and in two cases we used a specially designed urologic basket.

Keywords: Atrial pacing lead • Dislodgement • Urologic basket • Percutaneous repositioning

Methods

Cases performed by deflectable ablation catheters

Three patients, who had atrial lead dislodgment and were diagnosed early in post implantation follow up, were selected for this procedure. In two cases the atrial lead was dislodged to SVC. In both cases we were able to reposition the lead successfully but in one of them the lead migrated again into SVC. In the third case, the tip of atrial lead was dislodged to the ventricular side of the anterior leaflet of tricuspid valve. It was repositioned successfully.

In the follow up period (which is 9 months up to now), the leads remain stable in RA.

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Impact of Dialysis on Open Cardiac Surgery

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Abstract

Background: Dialysis patients frequently have coronary artery disease but are regarded as high risk patients for coronary artery bypass grafting (CABG).

Methods: Between February 2002 and September 2006, seventeen dialysis-dependent patients underwent isolated CABG at our center. CABG was performed under cardiopulmonary bypass (CPB) for all the patients. All cases had been maintained on hemodialysis and the duration of preoperative hemodialysis ranged from 6 to 24 months (mean 13.4±6.4). The patients’ characteristics, clinical and operative data as well as perioperative and mid-term outcome were reviewed.

Results: All patients were men with a mean age of 53±8.4 years. Mean preoperative ejection fraction was 45.5%±10.4% (range 25 to 60%). One internal mammary graft was used in 16 (94.1%) patients. Cardiopulmonary bypass and aortic cross-clamp times were 71.3±18.7 and 40.5±8.3 minutes respectively. The more frequent complication was prolonged mechanical ventilation in 2 (11.7%), there was no perioperative mortality. In mid-term follow-up (mean time: 11.8±9.5 months) the mid-term mortality rate was 20% (3 patients).

Conclusion: CABG in chronic renal dialysis patients can be accomplished with acceptable short and mid-term morbidity and mortality.

Keywords: Coronary artery bypass grafting• Dialysis • Mortality

Introduction

Dialysis treatment is one of the great technical achievements of 20th century medicine; it provides the chance of prolonged life in end-stage renal disease patients.1 Cardiac disease is the cause of death in 44% of long-term dialysis patients.2 Renal transplantation has been documented to lessen complication associated with renal failure. The underlying coronary artery disease must frequently be addressed to allow uncomplicated dialysis. It is imperative that it be considered before kidney transplantation as well, to assure a successful result.2 Although there has been tremendous advancement in the use of percutaneous transluminal coronary angioplasty (PTCA) for treatment of coronary artery disease, coronary
Predictors of Long-term Outcome in Patients with Acute Coronary Syndrome Undergoing Percutaneous Coronary Intervention: A single center registry (THCR)

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Abstract

Background: This study sought to access differences in long-term (9 months) outcomes between Acute Coronary Syndrome (ACS) patients who undergo early intervention compared to Percutaneous Coronary Intervention (PCI) in stable and refractory conditions.

Methods: Data originated from Tehran Heart Center Registry- interventional cardiology (THCR-IC) and consisted of 1267 patients divided into two categories; 227 patients had features corresponding to acute coronary syndromes (17.9%) and 1040 patients suffered from stable angina (82.1%). They were admitted between April 3, 2003 and April 25, 2004.

Results: The clinical success rate of PCI was higher in ACS (97% vs. 94%; P=0.037), while In-hospital complications were similar in both groups. During the follow-up period, clinical restenosis was not significantly different and the overall number of re-interventions caused by restenosis or progression was not more frequent in ACS patients. Also, 1.3% of ACS and 0.4% of SA patients died, but the difference was not statistically significant (P=0.16). Multivariate analysis showed that female sex (OR=25.6; P=0.003) and previous history of PCI (OR=8.4; P=0.016) were the only strong independent risk factors for major adverse cardiac events. Analyzing ACS patient outcomes using Mantel-Hanzel analysis showed that the female sex was the only factor which strongly increased the incidence of MACE.

Conclusion: Both ACS and SA patients who underwent coronary intervention had similar in-hospital and composite major adverse cardiac events, nevertheless female gender must be considered as an independent risk factor for major adverse cardiac events especially in patients with acute coronary syndrome who undergo PCI.

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Keywords: Acute coronary syndrome • PCI • Outcome

Introduction

Patients with Acute Coronary Syndromes are at risk for adverse cardiac events.1 In a patient with unstable angina, the risk of acute myocardial infarction or death is high: 20% of patients within 30 days after the onset of symptoms and 25% in 6 months.2 Mortality in this group of patients varies from 1.5 to 2.5 after six weeks to 7-10% after a year.3 The
Case Report

Myocardial Infarction in a Patient with Prosthetic Aortic Valve

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Abstract

A 45-year-old man with a history of Aortic Valve replacement presented with acute chest pain which was diagnosed to be anterior wall myocardial infarction. He received thrombolytic therapy with streptokinase. Echocardiography and fluoroscopy showed normally functioning ball and cage aortic prosthesis. Coronary arteriography showed globular filling defect in midportion of left anterior descending coronary artery, most probably embolized thrombus. The patient underwent medical treatment especially warfarin with higher range of INR without any intervention. He had a smooth in-hospital course and uneventful recovery.

Introduction

Approximately 6 percent of all patients with STEMI do not have coronary atherosclerosis demonstrated by coronary angiography or at autopsy. Many of these cases are caused by coronary artery spasm and or thrombosis; perhaps with underlying endothelial dysfunction or small plaques that are not apparent on coronary angiography. One of the additional causes includes coronary emboli (perhaps from small mural thrombosis, a prolapsed mitral valve or a myxoma).1

We report the case of a patient with myocardial infarction caused by an uncommon etiology that was an embolized clot.

Case Report

A 45-year-old man, with a 20-year history of aortic valve replacement and under occasional treatment with warfarin 5mg and INR (about 2), was admitted because of acute, severe chest pain which was initiated 10 hours before presentation. He had clinical scenario of acute coronary syndrome and 12-lead ECG showed ST-Elevation and T-wave Inversion on v2-v6, a characteristic of acute anterior wall MI. The diagnosis was documented with increase in Troponin level and creatine kinase MB.

The echocardiography showed akinesia in apical segments and normally functioning ball and cage valve in aortic position. Thrombolytic therapy was done with streptokinase infusion. After a good hospital course, the patient was discharged and was referred to our hospital, which is a tertiary center. The perfusion scan with technetium 99 showed stress induced perfusion defect in the apical segment: so coronary angiography was planned. Fluoroscopy revealed normally functioning Starr-Edward, Aortic prosthesis. In selective coronary arteriography, Right coronary and left circumflex

Keywords: Aortic prosthesis • Myocardial infarction • Ball and cage valve

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Moderate Ischemic Mitral Regurgitation: Should It Still be in Gray Zone?

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Chronic ischemic mitral regurgitation (IMR) is a common complication of acute myocardial infarction and is present in up to 20% of patients with coronary artery disease.¹

Mitral regurgitation has been clearly shown to affect the natural history of patients with previous myocardial infarction, especially in the case of left ventricular dysfunction.²,³ It can be caused by global left ventricular dilatation and resulting annular dilatation and displacement of both or single papillary muscle with adjacent wall dysfunction.

Treating IMR is a challenging topic for most cardiac surgeons. The role of isolated myocardial revascularization in the treatment of ischemic cardiomyopathy if moderate MR is present is still debated.⁴-¹² It means that moderate IMR is in the gray zone of surgical decision-making and that the long-term results of surgery and the influence of patient characteristics need to be deciphered.

Not chiming with studies that do not equate mitral valve repair with improved survival in patients with IMR,⁴,⁵ there are several studies that point to the progression of moderate MR after isolated CABG and its association with decreased long-term survival.¹³

According to the Society of Thoracic Surgeons (STS) database, concomitant mitral valve surgery increases the perioperative risk of CABG by roughly twofold; accordingly, the decision to repair or to leave the moderate IMR unchanged requires judicious clinical judgment. But what factors influence this judgment?

I am inclined to believe that there are two groups of factors which can collectively lead us to either perform the mitral valve intervention or leave it untreated: the clinical factors and imaging studies.

The clinical factors

Age

Given the rate of the progression of mitral regurgitation and the life expectancy of patients, isolated myocardial revascularization is sufficient treatment for patients with CAD and moderate IMR if patients are older than 75 years of age or more than 70 with a major comorbidity.

Symptoms

If the major complaint of a patient is dyspnea, it is in favor of opting for mitral valve repair. On the other hand, anginal pain as the major symptom tips the balance in favor of isolated CABG.

Paraclinical factors

Echocardiography

Findings such as severe left ventricular dysfunction, enlargement of the left atrium, complex regurgitant jet, marked annular dilatation, and marked increase in the left ventricular dimension and volumes are signposts pointing to mitral valve intervention.

Stress echocardiography

If the akinesia or hypokinesia of the basal segments improve...
A Case with Heart Failure and Skin Discoloration

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Question

A 60-year-old man with a history of CABG dating back 20 years and an extensive anteroseptal myocardial infarction 4 years ago came to emergency department. His complaints were dyspnea, orthopnea and leg edema. He had experienced 2 episodes of ventricular tachycardia two years ago, where one culminated in cardiac arrest. The patient received Digoxin, Furosomide, long acting nitrate, Amiodarone and spironolactone thereafter. In physical examination, the patient’s vital signs was stable, S3 was heard in cardiac auscultation and there were basilar rales in both lungs. Also, a gray-blue discoloration of his cheeks, lips and nose with sparing of nasolabial and other deep skin folds was seen (Figure 1). What is the best diagnosis for this type of skin discoloration?

Answer

Amiodarone is an antiarrhythmic drug used for various arrhythmias. Although it is a potent and frequently used drug, it has many side effects. Skin reactions are common with long-term amiodarone therapy. These include photophobia - which can be treated by avoiding sun exposure and the use of sun block - and a bluish-slate gray discoloration of the skin (so-called “blue man syndrome”), which is usually most prominent on the face.

The bluish-slate gray discoloration of the skin occurs in 1 to 3 percent of patients on chronic amiodarone therapy and appears to be due to the deposition of lipofuscin in the dermis. There may be a tissue threshold for amiodarone in individual patients above which skin discoloration appears and below which it fades. Thus, patients disturbed by skin pigmentation who are taking large doses (more than 400 mg/day) may notice improvement in skin discoloration by reducing the dose.

There is no specific therapy for the skin discoloration, but affected patients are advised to avoid sun exposure. Complete resolution after cessation of amiodarone therapy may take one year or more.

Amiodarone was discontinued. An ICD was implanted for him. After 8 months of drug discontinuation slight decrease in skin discoloration occurred (figure 2).

Up to now the patient has experienced no episode of ventricular arrhythmias. He is doing well with good functional capacity.
Comparison Between Transepicardial Cell Transplantations: Autologous Undifferentiated Versus Differentiated Marrow Mesenchymal Stem Cells

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Abstract

Background: Marrow-derived mesenchymal stem cells (MSCs) have been heralded as a source of great promise for the regeneration of the infarcted heart. There are no clear data as to whether or not in vitro differentiation of MSCs into major myocardial cells can increase the beneficial effects of MSCs. The aim of this study was to address this issue.

Methods: To induce MSCs to transdifferentiate into cardiomyocytes and endothelial cells, 5-Azacytidine and vascular endothelial growth factor (VEGF) were used, respectively. Myocardial infarction in rabbits was generated by ligating the left anterior descending coronary artery. The animals were divided into three experimental groups: I) control group, II) undifferentiated mesenchymal stem cell transplantation group, and III) differentiated mesenchymal stem cell transplantation group. The three groups received peri-infarct injections of culture media, autologous undifferentiated MSCs, and autologous differentiated MSCs, respectively. Echocardiography and pathology were performed in order to search for improvement in the cardiac function and reduction in the infarct size.

Results: Improvements in the left ventricular function and reductions in the infarcted area were observed in both cell transplanted groups (Groups II and III) to the same degree.

Conclusion: There is no need for prior differentiation induction of marrow-derived MSCs before transplantation, and peri-infarct implantation of MSCs can effectively reduce the size of the infarct and improve the cardiac function.

Keywords: Myocardial infarction • Stem cell • Bone marrow • Differentiation

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The Role of Serum Lipoprotein(a) in Increasing the Risk of Thrombus Formation in Patients with Atrial Fibrillation

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Abstract

Background: Atrial fibrillation (AF) is prevalent among cardiac patients; and as the risk of thromboembolism is high in this arrhythmia, discrimination of the effective risk factors in producing left atrial (LA) thrombosis is clinically important. The molecular structure of lipoprotein(a) [Lp(a)] is very similar to plasminogen, so it can be hypothesized that the high level of Lp(a) is a compromising factor for the prevention of fibrinolysis (thrombogenesis).

Methods: This case-control study was conducted in patients with chronic AF. Most of the subjects had mitral stenosis. LA thrombosis was confirmed by transthoracic and transesophageal echocardiography.

Result: The study group consisted of 50 chronic AF patients mostly with mitral stenosis. Half the patients had LA thrombosis (patient group or P) and the other half did not (control group or C). The mean age of the control group (C) and patient group (P) was 45±11 y and 57±9 y, respectively. There was no significant correlation between sex and LA gradient and existence of LA thrombus. LA size was 49±5 mm (C) and 56±9 mm (P), respectively. Left atrial blood velocity was 12±2 cm/sec (C) and 5±3 cm/sec (P), and Lp(a) concentration was 30±6.7 mg / dl (C) and 55±2.75 mg / dl (P). There was a significant correlation (p<0.001) between age, LA blood velocity, LA size, and serum concentration of Lp(a), which was confirmed by t-test.

Conclusion: There has been a great deal of research into the classic risk factors of LA thrombosis in chronic AF, but the study on the effect of Lp(a), which is an atherosclerosis risk factor, on the formation of LA thrombosis is almost new. According to the results of the present study, Lp(a) should be measured in all chronic AF patients. We can assume that lowering Lp(a) serum level may decrease the risk of LA thrombosis in chronic AF patients.

Keywords: Atrial fibrillation • Lipoprotein (a) • Mitral stenosis

Introduction

Atrial fibrillation (AF) is the most common arrhythmia and involves more than %5 of normal population older than 69 years.1,2 The prevalence of AF is %9.1 in patients with cardiovascular disease and %4.6 in subclinical status, and it
Methylenetetrahydrofolate Reductase (MTHFR) Gene C677T Polymorphism Is Associated with Coronary Atherosclerosis Disease in a Sample of Iranian Patients

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Abstract

Background: Several studies showed that elevated plasma homocysteine level is a risk factor for coronary artery disease (CAD). A common polymorphism C677T of methylenetetrahydrofolate reductase (MTHFR) gene is reported to be associated with decreased enzyme activity and increased blood homocysteine level.

Methods: This study evaluated the association between C677T polymorphism and blood homocysteine level with CAD in 100 patients compared to 100 normal controls.

Results: Higher prevalence of the C677T polymorphism as well as elevated level in blood homosysteine were observed in Iranian CAD cases compared to the normal control. The C677T MTHFR common polymorphism was significantly associated with CAD, supported by a P value 0.032 and Chi-square equal to 6.87.

Conclusions: The TT genotype of MTHFR gene was attributed to increased blood homocysteine level in patients compared to T/C and C/C genotypes in studied Iranian cases. This study shows the advantage of testing C677T polymorphism in affected patients as a risk factor for coronary artery disease.

Keywords: MTHFR • Coronary artery disease • Folate • Folic acid • Homocysteine

Introduction

Homocysteine is a thiol-containing amino acid produced from methionine metabolism. Elevated plasma homocysteine is generally accepted as an independent risk factor for cardiovascular disease and venous thrombosis.1-5 Enhanced risk associated with a 5µmol/l elevated total homocysteine was estimated to be the same as that associated with a 0.5 µmol/l increased total cholesterol in CAD patients.6 Homocysteine is involved in two main metabolic pathways; transsulfuration in which homocysteine is catalyzed to cysteine by cystathionine β synthase and Vit B6 and remethylation in which homocysteine is converted to methionine in a reaction catalyzed by methionine synthase. The methyl donor in the second reaction is methylenetetrahydrofolate (MTHF) which is converted by methylenetetrahydrofolate reductase enzyme (MTHFR).7

Common polymorphism of C to T substitution at the nucleotide position 677 of MTHFR gene causes alanine to valine substitution and produces thermolably sensitive form of enzyme. This polymorphism reduces enzyme activity and increases thermability in lymphocyte extract. It is
Pulmonary Valve Bacterial Endocarditis in Tetralogy of Fallot

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Abstract

We report two cases of Tetralogy of Fallot with pulmonary valve bacterial endocarditis where one extended to the branch of pulmonary artery (PA). This is a rare occurrence. Aggressive supportive care plus early and radical surgery can be life saving.

Keywords: Tetralogy of Fallot • Pulmonary valve endocarditis • Congenital heart disease

Introduction

Tetralogy of Fallot (TOF) is the most common cyanotic congenital heart disease.1-3 Infective endocarditis is uncommon condition with a high probability of morbidity and mortality in association with congenital cardiac malformations.3 Bacterial endocarditis is a serious and fatal complication in congenital heart disease4,5 and is a rare complication of TOF. In one report,7 TOF was seen only in 9.5% of cases undergoing surgical treatment for infective endocarditis associated with congenital heart disease. In these cases, endocarditis involved tricuspid valve and ventricular septal defect (VSD), but isolated pulmonary valve bacterial endocarditis has not been reported.

Case Reports

Case 1

A 7-year-old girl presented with a one month history of fever, dyspnea, aggravated cyanosis and weight loss. She was a known case of TOF since birth but was never treated before. She received antibiotic therapy one week prior to admission. Physical examination revealed blood pressure, 90/50 mmHg; heart rate, 120/min and temperature, 38.3°C. Other findings were systemic cyanosis, pulmonary crackle and clubbing. Laboratory examination showed hemoglobin concentration (Hb) 17.9 g/dl, white blood cell count (WBC) 16.800/mm³ and sedimentation rate 84mm/hour. Chest X-Ray depicted an enlarged heart and two pulmonary consolidations in the right lower pulmonary lobe.

Echocardiography revealed large VSD, overriding of aorta, normal left ventricular ejection fraction (LVEF), right ventricular outflow tract (RVOT) obstruction with 78mmHg gradient, small pulmonary annulus, and no visible pulmonary valve with large vegetation (3.5×1cm). This vegetation extended to the bifurcation of pulmonary artery (figure 1). Multiple blood culture was negative. Brain CT scan was normal, and abdominal CT scan showed splenomegaly.
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Clinical Investigation

Sharp Dissection versus Electrocautery for Radial Artery Harvesting

Radial arteries have been increasingly used during the last decade as conduits for coronary artery revascularization. Although various harvesting techniques have been described, there has been little comparative study of arterial damage and patency.

A radial artery graft was used in 44 consecutive patients, who were randomly divided into 2 groups. In the 1st group, the radial artery was harvested by sharp dissection and in the 2nd, by electrocautery. These groups were compared with regard to radial artery free flow, harvest time, number of clips used, complications, and endothelial damage.

Radial artery free flow before and after intraluminal administration of papaverine was significantly greater in the electrocautery group (84.3 ± 50.7 mL/min and 109.7 ± 68.5 mL/min) than in the sharp-dissection group (52.9 ± 18.3 mL/min and 69.6 ± 28.2 mL/min) (P = 0.003). Harvesting time by electrocautery was significantly shorter (25.4 ± 4.3 min vs 34.4 ± 5.9 min) (P = 0.0001). Electrocautery consumed an average of 9.76 clips, versus 22.45 clips consumed by sharp dissection. The 2 groups were not different regarding postoperative complications, except for 3 cases of temporary paresthesia of the thumb in the electrocautery group; histopathologic examination found no endothelial damage.

We conclude that radial artery harvesting by electrocautery is faster and more economical than harvesting by sharp dissection and is associated with better intraoperative flow and good preservation of endothelial integrity. (Tex Heart Inst J 2006;33:9-13)

Using the radial artery (RA) as an arterial conduit was first proposed by Carpentier and colleagues in 1973; however, shortly thereafter, some surveys showed high occlusion rates, which at last led to the abandonment of RA use. In the 1990s, studies showing long-term patency of RA grafts—of about a decade—revived the use of RA grafts, so that nowadays the RA is increasingly used as the 2nd conduit of choice, after the internal mammary artery, especially in cases of total arterial revascularization.

The radial artery and other limb arteries are classified as type III, according to He's functional classification system, and are constructed predominantly of muscle cells (in the middle layer of their walls), which makes them vulnerable to vasoconstriction as a result of mechanical or thermal stimuli. Furthermore, these arteries show a higher contractility in response to vasoconstrictors. Early graft failures and occlusions were attributed to this vasoconstrictor mechanism and to the endothelial damage caused by trauma during harvesting, which leads to a higher propensity for platelet aggregation and thrombosis.

To prevent these events, the so-called minimally traumatic harvesting technique was developed to minimize touching and manipulating the vessel. In addition, various antispasmodic drug protocols were introduced to prevent vasoconstriction; these protocols included the use of vasodilator drugs such as verapamil, nitroglycerin, nitroprusside, milrinone, and papaverine, given singly or in combination. Acar and colleagues suggested the systemic use of diltiazem and the topical or intraluminal use of papaverine; furthermore, others showed that 10 minutes of exposure to intraluminal papaverine would result in near-maximal RA dilation.

At our center, we started using RA for coronary artery bypass grafting (CABG) in 1999. Initially, we harvested the arteries by sharp dissection, which was very time-consuming and expensive, because it used too many hemostatic clips. Harvesting by electrocautery was thought to be free of these problems, but we were...
Contribution of endogenous opioids and nitric oxide to papillary muscle contractile impairment in cholestatic rats

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Abstract

Attenuated responsiveness to adrenoceptor stimulation has been proposed as an important factor underlying cardiovascular complications of cholestasis. We examined isolated papillary muscle responsiveness to α (phenylephrine) and β-adrenoceptor (isoproterenol) agonists in 7-day bile duct-ligated rats. We investigated the role of nitric oxide (NO) and endogenous opioids in papillary muscle hyporesponsiveness to isoproterenol stimulation. In order to evaluate the effect of NO and endogenous opioids, animals were treated with chronic subcutaneous injections of N (ω)-nitro-L-arginine methyl ester (L-NAME, 10 mg/kg/day) or naltrexone (20 mg/kg/day), or isolated papillary muscles were exposed acutely to the same drugs (10⁻⁴ and 10⁻⁶ M, respectively) in an organ bath. The basal contractile force of papillary muscle, +dT/dt max and −dT/dt max, was significantly decreased in bile duct-ligated rats compared to sham-operated ones (P<0.05, for each value). The concentration–response curve for phenylephrine and isoproterenol demonstrated a reduced maximum effect in bile duct-ligated rats compared to the sham-operated group (P<0.01 and 0.05, respectively). Basal contractile abnormalities of bile duct-ligated rats were corrected by L-NAME or naltrexone treatment, either acute or chronic. While chronic L-NAME treatment resulted in a left-ward shift (P<0.05), it had no effect on the maximum effect in bile duct-ligated rats. Acute L-NAME treatment did not influence isoproterenol responsiveness. Acute and chronic naltrexone treatment resulted in partial and complete correction of the hyporesponsiveness of bile duct-ligated rats, respectively (P<0.05). This investigation demonstrates that the papillary muscles of 7-day bile duct ligated-rats have an impaired basal contractility and hyporesponsiveness to both α and β-adrenoceptor stimulation. It also provides evidence for the involvement of increased opioidergic tone and NO overproduction in cholestasis-induced cardiac impairment.

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Keywords: Adrenoceptor; Cardiomyopathy; Cholestasis; Endogenous opioid peptide; NO (Nitric oxide); Papillary muscle

1. Introduction

Cholestatic liver disease is associated with widespread derangements in cardiovascular (Bomzon, 1986; Green et al., 1986; Lumeltgil et al., 1991; Tajuddin et al., 1990) and renal (Better and Bomzon, 1998; Heidenreich et al., 1987) systems. The association between obstructive jaundice and post-operative acute renal failure and shock, as the most life-threatening complications, is a well-established clinical phenomenon (Better, 1986; Green and Better, 1994). Although various pathophysiological mechanisms have been proposed, recent research has focused on an insufficient response of the cardiovascular system to stimulating agents, such as adrenoceptor agonists, in stressful conditions (Jacob et al., 1993; Mani et al., 2002; Namiranian et al., 2001). Consistent with this hypothesis, hyporesponsiveness to chronotropic (Gaskari et al., 2002; Mani et al., 2002; Nahavandi et al., 2001), inotropic (Binah et al., 1985, 1987; Jacob et al., 1993) and vasoactive (Namiranian et al., 2001; Tajuddin et al., 1990) agents has been reported in cholestatic patients or animals.

Various mechanisms have been suggested to explain the hyporesponsiveness of the cardiovascular system to adrenoceptor agonists. Nitric oxide (NO) and endogenous opioid

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OBJECTIVE: The purpose of this study was prevention of adhesion formation in reoperative cardiac surgery using laser-treated silicone (LTS) membrane as a new pericardial substitute in the sheep model. METHODS: Thirty ewes (35-45 kg) were used and categorized into two groups including test and control groups. In test group (n = 18), the pericardium was excised, and the LTS membrane was implanted as a pericardial substitute. In the control group (n = 12), the pericardium was excised without LTS membrane implantation. During follow-up ranging from 3 to 28 months, animals were observed for any clinical sign of postoperative problems. Thirty reoperations were performed in both test and control groups to evaluate adhesion formation. RESULTS: In the control group, dense adhesions were observed, while in the study group adhesion formation was reduced at all sites covered by LTS membrane (p < 0.03), and no infection or other complications were observed. CONCLUSIONS: The LTS membrane is safe and efficacious in the reduction of pericardial adhesion formation and might be used in patients undergoing cardiac surgery who need reoperation.

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Work in progress report - Cardiac general

Papillary muscle approximation combined with ventriculoplasty in patients with ischemic cardiomyopathy and functional mitral regurgitation: effects on mitral valve and LV shape

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Abstract

Recent studies define functional mitral regurgitation (MR) and worsened left ventricular (LV) systolic indices as the widening of the dimension between papillary muscle heads; consequently, narrowing this distance may improve the mitral valve and LV function. Thirty (22 males; mean age: 57 ± 7 years) candidates for CABG underwent ventriculoplasty and in 50% of them papillary muscle approximation was also performed (group 1). All the patients had grade 3 to grade 4 MR with an interpapillary muscle distance of more than 2.5 cm. In group 1 the papillary muscles were drawn together by an encircling loop using a 4-mm Gore-Tex tube or umbilical tape. Mitral annuloplasty and Dor procedures were performed in all the patients. Postoperative echocardiography revealed significant changes in systolic and diastolic sphericity indices in the PMA group. There was one hospital death in each group, and within a short mean follow-up period of 9 months, there were no late deaths. Improvement of NYHA class and MR were significantly better in the PMA group. Papillary muscle approximation in selected patients has a clear effect on the mitral valve and LV shape by reducing tethering and sphericity due to the displacement of the papillary muscles.

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Keywords: Ischemic mitral regurgitation; Papillary muscle approximation; Ventricular restoration

1. Introduction

Dilatation of the left ventricle occurs in a chronic process of ventricular remodeling after myocardial infarction. Those having a diffuse akinetic left ventricle with chronic heart failure have been known to be less favorable candidates for CABG, and cardiac transplantation is a possible option when medical treatment has failed.

In these patients, an increase in left ventricular end-systolic volume and sphericity indices is associated with inadequate approximation of the papillary muscles during systole and causes significant functional MR. Ring annuloplasty is the most widely accepted surgical procedure for functional ischemic MR, but variable outcomes and a high rate of late recurrence have been reported [1].

Endoventricular patch plasty, used for improving ventricular function and slowing the process of ventricular remodeling in patients with ischemic cardiomyopathy, reduces LV volume and tends toward a more physiologic reorganization of the ventricular cavity. However, some studies show that while systolic pump function improves after the Dor procedure, the left ventricle becomes more spherical. In addition, late mitral regurgitation is more frequent in patients with a larger and more spherical left ventricle [2]. The purpose of this study was to describe the technique and report the early results of papillary muscle approximation (PMA), combined with ventriculoplasty for ischemic cardiomyopathy and functional MR, and compare the result of this method with ventriculoplasty alone.

2. Materials and methods

2.1. Patient selection

Thirty (22 males and 8 females; mean age: 57 ± 7 years) with ischemic cardiomyopathy were selected for this study. Candidates were determined by preoperative and intraoperative echocardiography, demonstrating an increased interpapillary muscle distance, restricted leaflet motion, concave anterior leaflet, without other signs of anatomic valve disease and varying degrees of annular dilation in combination with reduced ventricular ejection fraction with scar tissue in the apex. Our general policy was to intervene on symptomatic MR, 4+ MR or grade 3+ MR and large LV volume. The preoperative ejection fraction was 23 ± 6%, and an interpapillary muscle distance of more than 2.5 cm. The LV end-diastolic volume, assessed by echocardiography was 278 ± 54 ml. New York Heart Association Class (NYHA) was III and IV.

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Asymptomatic bacteriuria in type 2 Iranian diabetic women: a cross sectional study
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Abstract

Background: The risk of developing infection in diabetic patients is higher and urinary tract is the most common site for infection. Serious complications of urinary infection occur more commonly in diabetic patients. To study the prevalence and associates of asymptomatic bacteriuria (ASB) in women with type 2 diabetes mellitus in the Iranian population, this study was conducted.

Methods: Between February 10, 2004 and October 15, 2004; 202 nonpregnant diabetic (type 2) women (range: 31 to 78 years old) with no abnormalities of the urinary tract system were included in this clinic based study. We defined ASB as the presence of at least 10^5 colony-forming units/ml of 1 or 2 bacterial species, in two separated cultures of clean-voided midstream urine. All the participants were free from any symptoms of urinary tract infection (UTI). Associates for developing bacteriuria was assessed and compared in participants with and without bacteriuria.

Results: In this study, the prevalence of ASB was 10.9% among diabetic women. E. coli was the most prevalent microorganism responsible for positive urine culture. Most of the isolated microorganisms were resistant to Co-trimoxazole, Nalidixic acid and Ciprofloxacin. Pyuria (P < 0.001) and glucosuria (P < 0.05) had a meaningful relationship with bacteriuria but no association was evident between age (P < 0.45), duration of diabetes (P < 0.09), macroalbuminuria (P < 0.10) and HbaA1c level (P < 0.75), and the presence of ASB.

Conclusion: The prevalence of ASB is higher in women with type 2 diabetes, for which pyuria and glucosuria can be considered as associates. Routine urine culture can be recommended for diabetic women even when there is no urinary symptom.

Background
Diabetes leads to several abnormalities of the host defense system, and higher glucose concentration in urine may serve as a culture medium for pathogenic microorganisms as well. The risk of developing infection in diabetic patients is higher [1,2] and urinary tract is the most common site for infection [3,4]. Serious complications of urinary infection, such as emphysematous cystitis,
Comparison of Specifications, Short-Term Outcome and Prognosis of Acute Myocardial Infarction in Opium Dependent Patients and Non-dependents

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Abstract

Background: The effects of opium dependence on prognosis and short term outcome of patients with acute myocardial infarction (AMI) are not clear yet. Methods: From March 2004 to August 2004 all male patients admitted with diagnosis of AMI were enrolled. Patients who fulfilled DSM-IV-TR criteria were chosen as opium dependent patients (ODP). Demographic data, risk factors, peak enzyme levels, location of MI, mortality and ejection fraction were collected and analyzed. In short term follow up (184 ± 37 days) we studied; mortality, readmission, functional class, performed revascularizations and coronary angiogram results. Results: A total number of 160 patients were enrolled, of which 45 (28.1%) were opium dependent. In 137 patients 6 months follow up was completed. Duration of admission was higher in ODP (11.3 days versus 8.7, P= 0.03) There was no significant difference in age, EF, location of MI, peak enzymes levels, angiographic findings, risk factors (except for cigarette smoking and triglyceride level), in-hospital mortality, need for readmission, 6 months mortality, functional class, and the need for revascularization. Conclusion: In an unselected cohort of patients admitted with AMI, there was no significant difference in specifications, short term outcome and prognosis of AMI between ODP and non-dependents except for duration of hospitalization (German J Psychiatry 2005; 8:33-37).

Keywords: Opium dependence, acute myocardial infarction, mortality, prognosis, angiographic findings

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Introduction

Opium dependence is a major public health problem in some parts of the world including our country Iran. Opium has always been the most widely abused substance in Iran. Unlike the pure opioids such as morphine, opium is a complex and variable mixture of substances. Daily amount used both by smoking and by mouth vary from less than 1 gram to more than 30 grams equivalent to 75-3000 mg of morphine. The effects of opium are essentially those of morphine. The major effects of opium are on central and autonomic nervous systems and the bowels, while it has certain influences on other organ systems including respiratory and cardiovascular systems (Kalant, 1997). Orthostatic hypotension has been reported after opium consumption. Several investigations about the effects of opioid peptides on cardiovascular system have also been performed. They show that hypotension, bradycardia, peripheral vasodilatation or sometimes hypertension and tachycardia are among the cardiovascular effects of opioids (Ventura et al., 1992) which are produced mainly through their effects on K and Ca channels as well as adenylate cyclase (Brink et al., 2003). Opioid peptides of myocardial origin have also recently been shown to play a key role in local regulation of the heart. Ischemic preconditioning which
Preoperative Carotid Artery valuation in 1045 Patients Undergoing Coronary Artery Bypass Graft Surgery

**Backgrounds/Objectives:** To evaluate the prevalence of significant carotid artery stenosis and its determining factors in candidates of coronary artery bypass graft (CABG) surgery.

**Patients and Methods:** 1045 consecutive CABG candidates underwent carotid artery Doppler examination in a cross sectional study. The relation of age, gender, history of smoking and diabetes, as well as lipid profile to significant carotid stenosis was evaluated.

**Results:** In study subjects, mean age of 60.57±9.3 years, the prevalence of significant carotid stenosis (>60%) was 6.9%. In subjects older than 65 years the significant stenosis tolled to 12.5%. Over 50 years of age, female gender, hypercholesterolemia and diabetes were independent determining factors for significant carotid stenosis.

**Conclusion:** Significant carotid stenosis has significantly higher prevalence among patients over 50 years of age. Cost benefit studies are recommended to revise the current evaluation protocols.

**Keywords:** Doppler sonography, CABG, carotid artery

**Introduction**

Excluding intraoperative death, stroke is the most dreaded perioperative complication in patients that undergo coronary bypass surgery. The prevalence of stroke is 2.1-5.2% in bypass surgery patients with a mortality rate up to 38%. The prevalence of stroke is 2.1-5.2% in bypass surgery patients with a mortality rate up to 38%. Detachment of debris from carotid or aortic atherosclerotic plaques, embolization of the intracardiac clot and a decrease in perfusion pressure to <60 mmHg are the etiologic causes of stroke in bypass surgery. Carotid stenosis can be diagnosed and managed preoperatively. Therefore, several studies recommend preoperative carotid evaluation in all bypass candidates. However, some others recommend it only in high risk patients. The stated determining factors are over 65 years of age, carotid bruit on physical examination, female gender, previous cerebrovascular accident or transient ischemic attack, peripheral vascular stenosis, hypertension, left main coronary stenosis, history of smoking, and diabetes.

In this study, we aimed to assess the prevalence of significant carotid artery stenosis and its pertaining determining factors among the patients of a referral heart center who should undergo coronary bypass surgery.

**Patients and Methods**

Over June 2004-May 2005, carotid Doppler study was performed on all the patients (n=1045) who referred to Tehran Heart Center (a university referral center) for coronary bypass surgery. Carotid Doppler was done by an expert radiologist who had been practicing Doppler studies on a daily basis for
ARE THERE ANY DIFFERENCES IN MORTALITY, COMPLICATIONS AND LATE OUTCOME OF PERCUTANEOUS INTERVENTION IN PATIENTS WITH DIFFERENT EDUCATIONAL LEVELS?

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Background: It has been shown that the socioeconomic and cultural status of adults in industrialized countries has a significant impact on cardiovascular disease mortality and morbidity. It has been shown also that higher education was associated with lower mortality from all causes, cardiovascular diseases, and coronary heart disease in both genders. The aim of this study was to evaluate whether or not educational level of patients influences success rate, mortality rate, complications and late outcomes.

Methods: 1030 consecutive patients who underwent PCI in Tehran Heart Center from April 2003 to March 2004 were analyzed. The patients were divided based on their educational level into three groups: Group A: no education, Group B: high school diploma, Group C: diploma and above. Results were analyzed regarding success rate, early and late outcomes in each educational group. Follow-up was performed at 8 months.

Results: 25% (256) of our patients were in group A, 45% (461) in group B and 30% (315) in group C. There were no significant differences regarding incidence of hyperlipidemia, previous MI, CABGS or PCI. The rate of ad hoc PCI procedure was significantly higher in group C compared to groups A and B.

Conclusion: This study has shown no significant relationship between the level of education of patients who underwent PCI procedure and their procedural success rate, mortality and other early and late outcomes.

Keyword: EDUCATION LEVEL, PERCUTANEOUS CORONARY INTERVENTION
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Rhabdomyosarcoma of the Middle and Inner Ear

Abstract: Rhabdomyosarcoma of the middle ear is a rare tumor. It may be locally invasive or spread by distant metastasis. It generally has a poor prognosis. We describe a case of rhabdomyosarcoma of the middle ear with extension to cavernous sinus, internal auditory and carotid canals.

Keywords: Rhabdomyosarcoma, Ear Neoplasm

Introduction

Rhabdomyosarcoma is the commonest soft tissue sarcoma in children under 15 years of age. It occurs predominantly in three regions; head and neck, genitourinary tract (retro-peritoneum) and extremities. Ear and mastoid bone are rare sites for rhabdomyosarcoma. Most cases of ear rhabdomyosarcoma show involvement of middle and external ear at the time of diagnosis. Herein, we report on a patient with rhabdomyosarcoma affecting middle and inner ear, with meningeal extension and an intact tympanum.

Case Presentation

A five-year-old boy presented with sudden onset right eye deviation of one month duration. He also complained of inability to close his right eye and deviation of the right corner of his mouth for two weeks. He had no pain. In addition, he had a proprioceptive defect and ataxia. On physical examination, there was right-sided sixth cranial nerve palsy and complete peripheral right facial nerve palsy. No nystagmus was detected. Some eardrum retraction was also observed. There was no detectable lymphadenopathy on palpation. The right ear was reported to be deaf by means of audiometry. Tympanometry showed no movement of the right eardrum.

On axial CT scan, a lytic lesion was detected in the apex of the right petrous bone with involvement of mesotympanum and the eustachian tube (Figure 1-A). MRI revealed a space occupying lesion which was iso-signal on T1 and hyper-signal on T2 weighted images (Figure 1-B). Subsequent to Gadolinium administration, an abnormal enhancement of the cavernous sinus and internal auditory canal was observed (Figure 1-C).

The tumor was resected by a transmastoidal approach. Extensive involvement of cochlea, internal auditory canal, jugular foramen and cavernous sinus was observed at surgery. The surgical specimen was reported as embryonal rhabdomyosarcoma. Chemo-radiotherapy was begun after the pathology report.

Discussion

Rhabdomyosarcoma is a malignant tumor that usually arises from the sites where striated muscle tissue is normally absent (e.g., in the common bile duct and urinary bladder) or where striated muscle is scanty (e.g., in the nasal cavity, middle ear and vagina).
Assessment of Safety and Efficacy of Transjugular Liver Biopsy As a Diagnostic Method in Adult Patients with Congenital Bleeding Disorders with HCV Infection

Background/Objectives: Liver biopsy in patients with congenital bleeding disorders (CBD) and hepatitis C virus (HCV) infection is still a challenge between risk of procedure and effect of biopsy result on management.

Materials and Methods: We did transjugular liver biopsy (TJLB) on 12 patients with CBD with chronic HCV infection and elevated liver enzymes to determine its safety, efficiency and therapeutic consequences.

Results: All patients were men, with a median age of 29.5 years (14–54 years). Eleven patients had haemophilia A (10 severe, one moderate) and one patient had factor XII deficiency, with no titer of inhibitor. HCV genotyping was carried out with type 1a (7 patients), type 1b (2 patients), type 3 (2 patients) and genotype la and lb (1 patient). HIV and HBV co-infection was negative in all patients. We used the modified Ross needle with 100% transjugular access rate to the hepatic veins and 92% success rate in tissue obtaining. The specimen obtained was satisfactory but limited for histopathologic diagnosis in 54.5%. Mild hepatitis was revealed in 4 patients (36.4%), moderate hepatitis in 5 (45.4%) and extended fibrosis or cirrhosis in 2 (18.2%). There were 2 procedure-related complications (16.6%). The major limitation of technique was low number of portal area in liver biopsies.

Conclusion: TJLB with some limitations is useful in patients with CBD. Transjugular approach to liver biopsy is a safe and effective alternative to the percutaneous approach in patients with CBD and could be requested to determine their liver prognosis and considered for diagnostic liver biopsy prior to anti-HCV therapy.

Keywords: congenital bleeding disorder, liver, biopsy, hepatitis

Introduction

Since patients with hemophilia require replacement coagulation factors, they are at an increased risk of contracting a number of blood-borne infections such as HCV, HBV, and HIV. The prevalence of HCV infection among patients with congenital bleeding disorders ranges from 86 to 98%. The long-term effects of this infection in the hemophilic population are as yet unclear. It is further suggested that at least 50% of patients develop chronic hepatitis 10-20 years after infection, and perhaps up to 20% of them may develop cirrhosis.

The challenge for those who care for this population is to determine the extent of liver disease in order to determine the prognosis and to plan appropriate treatment strategies. Liver biopsy, a necessary component of the evaluation of patients with chronic liver disease particularly in those infected with HCV genotype 1, provides direct histological assessment of liver inflammation and fibrosis. Consequently, the 2002 National Institutes of Health (NIH) Consensus Development Conference on HCV recommends that HCV-infected patients undergo pretreatment liver biopsy to assess the degree of hepatic fibrosis and inflammation.
In vitro and in vivo hemocompatibility

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ABSTRACT
Attempts have been made in this study to prepare a homogeneous and stable coati vascular grafts (GPVG) using an electrophoresis method to evaluate thromboresista GPVG in comparison to non-coated PVG and InterGard (collagen sealed PVG) as con (LDH) activity measurement was carried out on all PVG types to evaluate platelet ad reaction GPVG and non-coated sheets of knitted polyester fabric were implanted sim flank of rats subcutaneously. The GPVG, non-coated and control were implanted in end or end-to-side implantation substitution in 25 sheep for 4-60 weeks. Results sh coating on polyester vascular grafts reduced the number of adherent platelets and p and spreading on the surface in comparison with non-coated and control. Pathologic inflammatory reactions were totally resolved after 12 weeks and there was no differ between graphite coated, non-coated and control patches. All grafts remained paten significant difference in patency rate between these three types of PVG. We found t pre-clotting and it showed lower platelet aggregation, thinner capsule formation and months. However, suturing of GPVG was more difficult in comparison with the other Vascular Access 2004; 5: 125-32)
COMPARISON BETWEEN NUMBER OF NERVE FIBERS IN NORMAL BREAST TISSUE, BENIGN LESIONS AND MALIGNANT BREAST TUMORS

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Abstract- Breast cancer is common and is considered second cause of cancer related mortality in females. Regarding importance of breast cancer, more investigation in this field is recommended. For many years investigators believed that neoplasms were not innervated but new findings have proved otherwise. This descriptive study was carried out to compare number of nerve fibers in benign, malignant and normal breast tissue. Of each group several slides were reviewed and 3608.50 mm² of malignant tumors (ductal carcinoma), 3641 mm² of benign tumors (fibroadenoma) and 2331.25 mm² of normal breast tissue (mammoplasty) were assessed. Numbers of nerve fibers were compared and a significant increase in nerve fibers was found in malignant tumors compared with benign tumors and normal breast tissue. Accuracy of hematoxylin and eosin method were examined by immunohistochemistry staining (neurofilament) method and affirmed. These results reveal that malignant tumors of breast have more nerve fibers than normal breast tissue or benign tumors. 

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Key words: Nerve fiber, breast neoplasms

INTRODUCTION

Breast cancer is common and is considered second cause of cancer related mortality in females. Regarding importance of breast cancer, more investigation in this field is recommended and innervation of tumors is a new source of investigation in this field.

For many years investigators believed that neoplasms were not innervated, but today with the aid of newer methods and more investigations this idea is under question. Many researches on different tumors, including pancreatic cancers (1), parathyroid gland adenoma (2), hepatocellular carcinoma and cholangiocarcinoma (3) have paid attention to innervation of the tumors.

There are some studies that show evidences of presence of nerve fibers in breast tumors (4), pigmented and non pigmented adenoma of the ciliary body (5), and prostate (6).

In accordance with these studies, an assay on prostate by one of the authors showed an increase of nerve fibers in malignant prostatic lesions compared to benign lesions. A similar study on prostate by Zhou et al. showed decrease of nerve fibers in malignant lesions compared to benign lesions (6), but they had used benign tissue around the malignant lesion for control.

We decided to compare the number of nerve fibers in normal breast tissue and malignant and benign breast tumors and confirm the results by immunohistochemistry staining.