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CORRELATION BETWEEN BLOOD LEVELS OF CRP, TNF- α (AS INFLAMMATORY FACTORS), AND IL-10 (AS ANTI-INFLAMMATORY FACTOR) AND CORONARY ARTERY DISEASE

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ABSTRACT

Background- The results of a great amount of research done the world over in recent years have indicated that atherosclerosis is an inflammatory disease. Most of these investigations were conducted on the correlation between inflammatory factors such as CRP, IL-2, and IL-1 and atherosclerosis. In this study, we evaluated inflammatory factors such as CRP and TNF- α as well as anti-inflammatory factor IL-10 and analyzed the correlation between the balance of these factors with atherosclerosis.

Methods- In total, 135 patients between the ages of 45 and 70 years who were admitted for coronary angiography were selected. All of the selected patients met the inclusion criteria for the research. After recording personal information, medical history, and any previous treatment in the questionnaire, blood samples were collected and levels of CRP (high-sensitive quantitative test), TNF- α , and IL-10 were measured in all the samples. We entered the acquired results, the routine blood examination, and the angiography results in the patients' charts and analyzed the results using statistical methods.

Results- The angiography results in the 135 patients were as follows: 19 (14.1%) cases had normal coronary arteries, 6 (4.4%) had minimal CAD, 43 (31.8%) had single-vessel disease, 29 (21.5%) two-vessel, and 38 (28.1%) had three-vessel disease. In the laboratory tests, the mean CRP level in patients with normal coronary arteries was 6 ± 4 mg/l; however in patients with CAD it was 17 ± 9 mg/l. Also, the mean IL-10 level in cases with normal coronary arteries was 4.4 pgr/mL, while in patients with CAD it was 2.6 pgr/mL; and serum level of TNF- α in patients with CAD was 6.3 ± 3.8 pgr/mL, whereas in cases with normal coronary arteries, the average serum level of TNF- α was 4.5 ± 2.2 pgr/mL.

Conclusion- The obtained results in this research showed a direct correlation between the blood levels of CRP and TNF- α with the existence and intensity of coronary artery disease. In addition, we found a reverse significant correlation between blood levels of IL-10 and existence of coronary artery disease. Although we found a correlation between reduced levels of IL-10 and intensity of coronary artery disease, it was not statistically significant. Furthermore, in patients with elevated blood levels of inflammatory and anti-inflammatory factors, the intensity of the coronary artery disease was far less than that in patients with high levels of inflammatory factors and reduced levels of anti-inflammatory factors. Therefore, we concluded that high levels of CRP and TNF- α and low levels of IL-10 had a significant correlation with the intensity of coronary artery disease

and also the balance between these factors had a significant correlation with the intensity of the coronary artery disease (*Iranian Heart Journal 2009; 10 (3):6-11*).

Key words: coronary artery disease ■ C-reactive protein ■ tumor necrosis factor- α ■ interleukin-10 (IL-10) ■ inflammation

The Effects of Ultrafiltration on Postoperative Respiratory Status in Adults Undergoing Coronary Artery Bypass Grafting

Abdollah Panahipour, MD¹ and Ali Dabbagh MD²

Abstract

Introduction- Systemic inflammatory response syndrome (SIRS) remains one of the major causes of cardiopulmonary bypass-associated organ injury during adult cardiac surgery. This study was designed and performed to assess the short-term effects of this technique on postoperative lung status in such patients.

Methods- In a double-blind, randomized clinical trial, 90 patients scheduled for elective CABG were selected and randomly assigned into 2 groups; the first group had ultrafiltration in their cardiopulmonary bypass circuit.

Results- The case group patients were extubated sooner compared to the control group. The postoperative oxygenation status in the case group was better than the control group.

Conclusions- The results of this study demonstrated that ultrafiltration could improve the postoperative respiratory status of those adults undergoing coronary artery bypass grafting (*Iranian Heart Journal 2009; 10 (3):12-16*).

Key words: ultrafiltration ■ coronary artery bypass graft surgery ■ respiratory status

Comparative Study of Pulmonary Function Tests before and After Successful Percutaneous Transvenous Mitral Commissurotomy

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Abstract

Backgrounds- Mitral stenosis (MS) causes elevation of left atrial and pulmonary venous pressures. Persistent elevation of pulmonary venous pressure causes anatomical and physiological changes in lung vasculature and tissue, and change in lung volumes thereafter. Studies showed improvement of lung function with improvement of mitral stenosis and decrease in left atrial pressure and pulmonary congestion. This study was performed to evaluate lung volumes before and after percutaneous transvenous mitral commissurotomy (PTMC), including FEV₁, FVC, SVC, and their percent and FEF of 25, 50, 75, 25-75 percent and PEFR before and within 48 h after PTMC, and to evaluate correlation of each with valve area.

Methods- 26 from 51 patients with inclusion criteria stayed in the study with non-random consequential selection and the others were excluded. All of the patients had moderate to severe MS, good mitral valve morphology, echo score below 11, and absence of clot in the left atrium. Spirometry was done in all of the patients before and after PTMC and FEV₁, FVC, SVC, FEF_{25%}, FEF_{50%}, FEF_{75%}, FEF_{25-75%}, FEV₁/FVC, and PEFR were measured.

Results- There were 26 patients (12 female, 14 male) with a mean age of 38.38 years old, mitral valve area was 0.88 cm² before and 1.46 cm² after PTMC (mean 0.58 cm² increase (p<.000). Mean value of lung volumes and flow changes were: SVC change= 100 ml (p<0.1), FVC=230 ml (p<0.005), FEV₁=250 ml (p<0.003), FEF_{50%}=0.85 (p<0.004), FEF_{25%}=0.98 (p<0.003), and FEF_{25-75%}=0.71 (p<0.01). Values for SVC, PEFR, and FEF_{75%} were not significant.

Conclusion- Mean value of FEV₁, FVC, FEF_{50%}, FEF_{25%} and FEF_{25-75%} increased significantly, but SVC, FEF_{75%} and PEFR had no significant improvement. This may suggest improvement of small airway function due to a decrease in lung congestion (*Iranian Heart Journal 2009; 10 (3):17-21*).

Key words: percutaneous transvenous mitral commissurotomy ■ pulmonary function tests ■ mitral stenosis ■ spirometry

Abbreviations: PTMC: percutaneous balloon mitral valvotomy; MS: mitral stenosis; FEV₁: forced expiratory volume at first second; FVC: forced vital capacity, SVC: slow vital capacity; PEFR: peak expiratory flow rate; FEF: forced expiratory flow

The Role of Human Platelet Antigen 1 Polymorphism in Development of Coronary Artery Stenosis in Iranian Population

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and P. Meschi⁵

Abstract

Background- Aggregation is the final step in activation of platelets and is mediated by presentation of GPIIb/IIIa receptors on the platelet membrane that binds to fibrinogen and von Willebrand's factor. There are common mutations in GPIII structure that can change the behavior of the molecule and may change the pattern of interaction between platelets and injured endothelium, thus they can have prognostic impact in coronary artery disease (CAD) and acute coronary syndrome. In some large trials, persons homozygous for the PIA2 allele had a greater chance of coronary stenosis and myocardial infarction (MI) than heterozygotes or non-carriers, but other studies did not confirm this association. This is the first study of PIA polymorphism in Iran and is aimed to find a possible association of this mutation and CAD in the Iranian population.

Method- In this case-control study, we chose 200 patients who underwent diagnostic coronary angiography between 2005 and 2006 in Hamedan, Iran. In these patients HPla genotype determination was done using PCR method.

Results- We found no significant association of coronary artery stenosis and PIA2A2 or PIA1A2 genotypes in our patients, p value > 0.05. However, there was a significant association between possession of PIA2 allele and occurrence of CAD in patients more than 50 years of age, p value 0.045.

Conclusion- Variations in PIA phenotype do not seem to have an association with ischemic heart disease, but the PIA2 allele may have a role in the development of atherosclerosis and MI in persons more than 50 years of age (*Iranian Heart Journal 2009; 10 (3):22-26*).

Key words: coronary artery disease ■ human platelet antigens ■ polymorphism

Efficacy and Safety of Tenecteplase (Metalyse) in Iraqi Patients with Acute ST-Elevation Myocardial Infarction

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Abstract

Background- Thombolytic therapy using tissue plasminogen activator has revolutionized the treatment of acute myocardial infarction. Tenecteplase was developed as a bioengineered variant of tissue-type plasminogen activator with specific, desirable properties. The aim of this study is to assess the efficacy and safety of tenecteplase in patients with AML.

Methods- 50 patients with acute STEMI were enrolled in this study; those patients had presented to the hospital within 12 hours of the onset of their chest pain and fulfilled the criteria of starting thrombolytic therapy. They had been randomly selected consecutive patients from those attending the coronary care unit of Al-Yarmouk Teaching Hospital, Baghdad during the period from October 2005 to August 2006. Tenectaplaste infusion over ten seconds was given according to body weight. ST-segment resolution was defined as reduction in the ST-elevation of 50% or more at 90 minutes.

Results- 40 patients (80% of the sample) were male. The range of patients' age was 28-80 years, with a mean of 54.94 ± 10.83 years and a median of 53 years old. ST- segment resolution had been observed in 27 patients (54% of the sample). The mean age of those with successful thrombolysis was 52.78 ± 10.8 years old, and 59.13 ± 10.3 years old for those who failed to respond to the thrombolytic therapy with tenecteplase. Statistical analysis revealed a highly significant effect of age on the frequency of ST-segment resolution (calculated $t= 24.78$, p -value <0.0001). The mean time to perfusion was 2.4 ± 2.37 hours and 4.76 ± 3.25 hours for those with successful thrombolysis and those who failed to respond, respectively. Eight out of 12 patients diagnosed with inferior STEMI had successful reperfusion. No one with double wall infarction had successful reperfusion. Two patients with diabetes (15.4%) and only 1 patient with hyperlipidemia (11.1%) had successful thrombolysis. None of those with 3 or more risk factors (7 patients) had successful reperfusion. The study showed that female patients had a higher chance of failure of thrombolysis (*Iranian Heart Journal 2009; 10 (3):27-35*).

Key words: acute myocardial infarction ■ thrombolytic therapy ■ tenecteplase

Detection of Atherosclerotic Plaque Composition Using Intravascular Images

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H. R. Sanati MD² and N. Navab PhD³

Abstract

Acute coronary syndromes (ACS) and sudden cardiac death are the main causes of morbidity and mortality in the world.¹ ACS are often the first manifestation of coronary artery disease, and the rupture of a coronary plaque is the main cause of ACS. Histopathological studies have revealed that the majority of thrombi result from plaque rupture.

Grayscale intravascular ultrasonography (IVUS), a tomographic imaging tool, can visualize coronary atherosclerosis *in vivo*, elucidating plaque area, plaque distribution, lesion length, and coronary remodeling. IVUS has demonstrated the discrepancies between the extent of atherosclerosis seen by coronary angiography and the actual extent of atherosclerotic disease.² Quantitative assessment of plaque composition has, however, not been possible with grayscale IVUS analysis, until now³ (*Iranian Heart Journal 2009; 10 (3):36-43*).

Key words: atherosclerosis ■ plaque ■ intravascular ultrasound

Suction Tip Migration to Internal Iliac Vein during Cardiac Surgery

Masoumali Masoumi MD and Feridoun Sabzi MD*

Abstract

During the cannulation of the inferior vena cava in a 29-year-old patient undergoing mitral and aortic valve replacement, the pump suction tip was inadvertently lost in the right atrium. After starting CPB and cardioplegic arrest of the heart, the right atrium and ventricle were searched for the foreign body, but it became evident by reontgenography that the foreign body had migrated to the pelvic veins. At the end of the operation, extraction with a Fogarty catheter was attempted but was not successful and the foreign body was extracted via laparotomy (*Iranian Heart Journal 2009; 10 (3):44-46*).

Key words: foreign body migration ■ iliac vein ■ heart surgery

Atrial Septal Aneurysm Concomitant with Severe Mitral Stenosis

Saeed Hosseini MD, Mehdy Hadadzadeh MD, and Alireza Alizadeh Ghavidel MD

Abstract

An atrial septal aneurysm is an uncommon abnormality and may be the origin of thromboembolic events. We herein present an unusual case of this septal abnormality with mitral stenosis and history of thromboembolic cerebrovascular accident (*Iranian Heart Journal 2009; 10 (3):47-49*).

Right Ventricular Infarction and Refractory Hypoxemia Following Coronary Artery Bypass Graft Surgery

G. Soltani MD¹ and M. Abbasi MD²

Abstract

Right ventricular (RV) infarction occurs in 19% to 51% of patients with left ventricular inferior wall acute myocardial infarction.^{1,2} The importance of RV infarction and its unique hemodynamic consequences were not well understood until the early 1970s. Among these consequences are hemodynamic disturbances, which may be mistaken for left ventricular dysfunction, pericardial tamponade, and pulmonary embolism. Another serious consequence associated with RV infarction is sudden right-to-left shunting through a previously unsuspected atrial septal defect (ASD) or patent foramen ovale (PFO). We herein describe a patient in whom postoperative RV infarction was associated with refractory hypoxemia through a PFO (*Iranian Heart Journal 2009; 10 (3):50-52*).

Key words: coronary artery bypass graft ■ myocardial infarction ■ right ventricle ■ hypoxemia

Approach to the Patient with Combined Coarctation of Aorta and Wolf-Parkinson-White Syndrome

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Abstract

At the present time the treatment of choice for postductal coarctation of aorta is percutaneous angioplasty and stenting. One crucial step for successful stenting of coarctation is accurate positioning of the stent across the lesion, which is difficult due to high pressure blood flow at the site of the coarct. To solve this problem, rapid pacing has been used to decrease cardiac output and blood pressure for a few seconds and prevent excessive motion of the stent during deployment. However, if coarctation is combined with pre-excitation syndrome, rapid atrial/ventricular pacing could cause life-threatening tachyarrhythmias. In this paper, we report a 28-year-old woman with combined coarctation of aorta and Wolf-Parkinson-White syndrome who underwent radio frequency catheter ablation of the accessory pathway and then stenting angioplasty of the coarctation was performed without any complication (*Iranian Heart Journal 2009; 10 (3):53-55*).

Key words: coarctation of aorta ■ Wolf-Parkinson-White syndrome ■ angioplasty