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Myocardial Infarction after Blunt Chest Trauma in Two Young Men

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ABSTRACT

Traumatic myocardial injury occurs in up to 55% of patients sustaining blunt chest trauma. We report two cases of myocardial infarction following blunt chest trauma in two young men due to a car accident. They were both suffering multiple trauma and were hospitalized in ICU. Diagnostic and therapeutic procedures performed for these patients are presented in this article. ***(Tanaffos 2007; 6(2): 77-79)***

Key words: *Trauma, Blunt chest trauma, Myocardial infarction*

INTRODUCTION

Traumatic myocardial injury occurs in up to 55% of patients sustaining blunt chest trauma (1). High-speed motor vehicle trauma results in rapid deceleration and produces the vast majority of blunt cardiac injuries (2, 3, 4). The most common scenario is for an unrestrained driver in a high-speed motor vehicle collision with his chest damaged by the steering wheel and steering wheel axis when the car comes to a sudden stop. Other less common mechanisms include falls from a height and a direct blow to the anterior chest, particularly in sport-related accidents (5). In some cases direct trauma to the abdomen has been found to generate enough upward force into the chest cavity to produce blunt cardiac injury (6).

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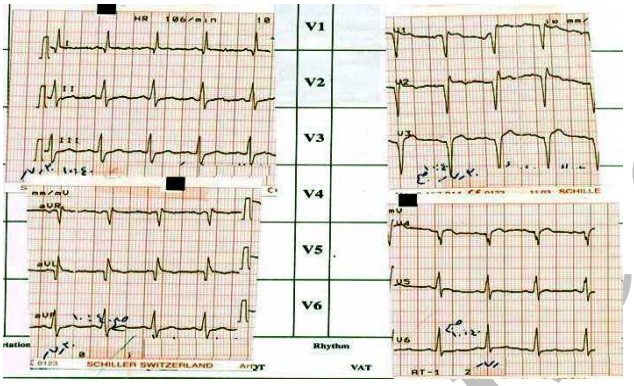
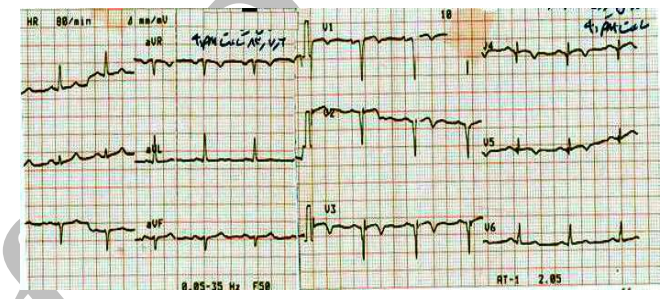
CASE SUMMARIES

Case 1: A 17-year-old boy with no previous history of heart disease referred to our hospital for repair tracheal stenosis. He had a motorcycle accident 5 months ago suffering multiple blunt trauma to his head, face and chest and was intubated for 19 days in the ICU while in a coma-state. After tracheostomy for tracheal stenosis, he was referred to our center after initial stabilization. Upon preoperative evaluation for mild cardiomegaly seen on CXR, a cardiology consultation was done. In his ECG fully-evolved anterior wall myocardial infarction (Q-wave, ST-elevation in V1-V4) was observed and in the echocardiogram reduced Left Ventricular (LV) function, EF=40%, global hypokinesia, LV dilation (IVS=0.8cm, EDD=5.6 cm,

ESD=4.3 cm) compatible with MI and LV dysfunction were documented. Due to his young age, history of chest trauma and abnormal dipyridamole thallium scan (SPECT) that revealed anterior wall perfusion defect was compatible with severe ischemia or MI in the anterior wall. He was scheduled for coronary angiography. Cardiac catheterization showed normal coronary arteries. As he had asymptomatic LV dysfunction, we treated him with ACE-inhibitor enalapril 2.5 mg/BD, carvedilol 6.25mg/BD, and digoxin 0.25/daily. He then was scheduled for surgery for tracheal resection and anastomosis. This was done for him successfully and he was discharged without complications.



Case 2: A 21-year-old male who suffered multiple trauma in a car accident was intubated for 20 days in the ICU. He was discharged after performing multiple surgical procedures on his leg. Two weeks after discharge he developed acute dyspnea and tracheal stenosis was diagnosed. He referred to our center for tracheal repair after tracheostomy. After hospitalization he developed severe retrosternal chest pain and on ECG recent anteroseptal MI (Q-wave, ST-elevation, T-wave inversion in V1-V5) was seen. Echocardiography revealed preserved EF=50%, anteroseptal and apicoseptal hypokinesia and mitral regurgitation (+1). Results of cardiac enzymes were normal. He was treated with aspirin and beta-blockers. On preoperative evaluation, dipyridamole thallium scan (SPECT) was done in which mixed MI and ischemia in the apicoanterolateral wall and mild ischemia in inferioapical wall were detected. Cardiac catheterization showed normal coronary arteries with preserved LV systolic function, EF=50% and apical dyskinesia. We treated him with beta-blockers and ACE-inhibitor and referred him for tracheal-resection and anastomosis. He uneventfully recovered afterwards.



DISCUSSION

Traumatic myocardial injury occurs in up to 55% of patients sustaining blunt chest trauma (1). High-speed motor vehicle trauma results in rapid deceleration and produces the vast majority of blunt cardiac injuries (2, 3, 4). The most common scenario is for an unrestrained driver in a high-speed motor vehicle collision with his chest damaged by the steering wheel and steering wheel axis when the car comes to a sudden stop. Other, less common mechanisms include falls from a height and a direct blow to the anterior chest, particularly in sport-related accidents (5). In some cases direct trauma to the abdomen has been found to generate enough upward force into the chest cavity to produce blunt cardiac injury (6). In the differential diagnosis of MI after blunt chest trauma, myocardial contusion, trauma-related coronary artery events such as coronary artery dissection (especially it is common in LAD), coexisting atherosclerosis with a fracture of or hemorrhage into a pre-existing plaque, spasm, thrombosis and emboli should be considered (7, 8). All conditions may produce chest pain, ECG and

segmental wall-motion abnormalities on echocardiography. ECG changes in blunt cardiac injury may reflect myocardial injury (Q-wave, ST-elevation or depression, conduction abnormalities, arrhythmia or non-specific changes such as a prolonged QT-interval) (9). Cardiac enzyme CPK and CPK-MB assays are not useful for victims of blunt chest trauma and the incidence of elevated CPK-MB fraction in stable victims ranges from less than 1% to 25% with an average of less than 10%. Coronary angiography is the best test for exclusion of coronary artery injuries such as dissection, thrombosis, emboli or coexisting coronary artery atherosclerosis (10). Optimal treatment is primarily supportive with ECG monitoring for arrhythmia detection and drug therapy for LV dysfunction and other complications. In case of coronary artery dissection, thrombolytic therapy or angioplasty and coronary stenting may be useful in selected cases (11).

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