

Severe Post-Traumatic Myocardial Contusion (Case Report)

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Abstract

Myocardial contusion is a frequent but often underestimated complication of blunt chest trauma. It involves cellular damage following non-penetrating thoracic trauma. It is commonly observed after road traffic accidents but can occur with any type of blunt thoracic trauma. We present a case of myocardial contusion following a road traffic accident in a 22-year-old male patient with no medical history, who was admitted to the emergency resuscitation room for severe trauma due to a road traffic accident. The lesion assessment revealed multiple pulmonary contusions in the thoracic area, with a moderate right-sided pneumothorax and a small left-sided pneumothorax, a right posterior basal hemothorax, and a large pneumomediastinum. The initial Electrocardiogram (ECG) showed no abnormalities apart from sinus tachycardia. Transthoracic echocardiography (TTE) revealed left ventricular hypokinesia with a normal right ventricle. Troponin levels were elevated at 7 ng/mL. Initial management included two peripheral venous lines, fluid resuscitation, oxygen therapy, and right pneumothorax decompression. Clinical and biological outcomes were favorable.

Key words: Chest Trauma; Myocardial Contusion; Troponin; Electrocardiogram

Introduction

Myocardial contusion is a potential complication of cardiac trauma [1]. Its incidence varies greatly due to its clinical polymorphism and the frequent presence of associated lesions that may mask the initial diagnosis [3-5]. Its morbidity and mortality are not negligible. This paper reports a case of post-traumatic myocardial contusion with clinical, electrical, biological, and echocardiographic repercussions [6, 8, 9].

Case Report

We report the case of a 22-year-old male with no medical history who was admitted to the emergency resuscitation room following severe trauma due to a road traffic accident. On admission, respiratory rate was 26 breaths/min, with significant subcutaneous emphysema involving the cervical, thoracic, and abdominal regions, associated with thoracic deformity and evident signs of right-sided pneumothorax. Blood pressure was 60/42 mm Hg, heart rate 132 bpm, and heart sounds were normal. Temperature was 37.4°C and capillary blood glucose 1.06g/dL.

Initial management included insertion of two peripheral venous lines, fluid resuscitation, oxygen therapy, and decompression of the right pneumothorax. The thoracic injury assessment revealed multiple pulmonary contusions, a moderate right pneumothorax, a small left pneumothorax, a right posterior basal hemothorax, and a large pneumomediastinum on chest CT scan (Figures 1, 2, and 3). In addition, ex-

tensive subcutaneous emphysema was noted in the thoracic and dorsal softs tissues.



Figures: 1, 2, and 3. Chest CT scan.

Initial ECG showed no abnormalities apart from sinus tachycardia (Figure 4). Transthoracic echocardiography revealed left ventricular hypokinesia; the right ventricle was normal. Troponin levels were elevated at 7 ng/mL. Internal milieu laboratory parameters were unremarkable. Due to persistent hemodynamic instability, dobutamine was initiated along with cautious fluid resuscitation. Clinical and biological progress was favorable, including weaning of catecholamines and normalization of troponin levels after 8 days.

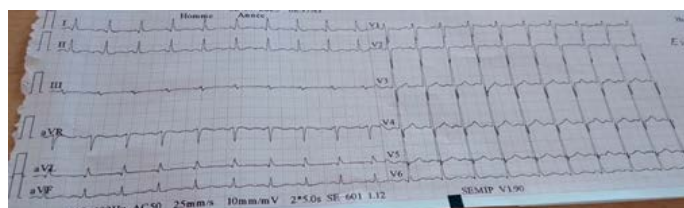


Figure 4: Electrocardiogram

Commentary

In the context of trauma, myocardial contusion is a distinct anatomic-clinical entity, often underdiagnosed due to its nonspecific clinical presentation. It results from sudden deceleration of the thorax, compressing the heart between the sternum and spine [11-14]. This can cause intramyocardial hemorrhage, rupture of intracardiac structures (valves, septum), and conduction disturbances [2].

The severity of lesions depends on the impact intensity and associated thoracic injuries [12]. Clinical presentation is variable, especially in polytrauma patients.

This explains the pulmonary signs (pneumothorax) observed in our case that helped uncover cardiac involvement. Common symptoms include dyspnea, chest pain, palpitations, hypotension, and signs of cardiogenic shock [12].

Complications may include acute heart failure, arrhythmias (extrasystoles, Atrioventricular block, ventricular tachycardia), and occasionally myocardial rupture [2, 7]. Electrical abnormalities are early and transient, with ECG changes such as AV block, bundle branch block, ventricular or supraventricular arrhythmias, and ST/T wave alterations. However, troponin assays have limited sensitivity and predictive value [4, 9]. Echocardiography is useful for diagnosis by identifying segmental wall motion abnormalities, pericardial effusion, and evaluating systolic function [8].

Cardiac MRI is very helpful to assess myocardial damage and distinguish contusion from infarction [15-18]. Definitive diagnosis requires histopathological examination.

Treatment is mainly symptomatic, involving hemodynamic support with fluid resuscitation and inotropes in case of heart failure, management of arrhythmias (beta-blockers, amiodarone, cardioversion if necessary), and regular biological, electrical, and echocardiographic monitoring [10, 13]. Recent data suggests lidocaine may help restore contractility after contusion [11]. Surgical repair is indicated only in rare cases of myocardial or valvular rupture [16]. Prognosis depends on contusion severity and associated injuries. Minor forms generally evolve favorably without sequelae [17], while severe cases can lead to major complications (malignant arrhythmias, cardiogenic shock, or rarely, myocardial rupture) [18].

Conclusion

In cases of blunt chest trauma, myocardial contusion should always be considered, especially in the presence of dyspnea, chest pain, ECG abnormalities, or elevated troponin levels [4, 15]. There is no accessible gold standard, and the diagnosis is usually made using a combination of several diagnostic tools. Appropriate monitoring helps prevent serious complications.

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