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Case report

# Penetrating injury to the heart – A case report

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ABSTRACT

We report a rare case of penetrating cardiac injury. Management of the unique life-threatening condition is described. The successful outcome of treatment of this severe group of patients could be achieved by maintenance of the following fundamental principles: rapid transport of patients to the nearest hospital, maximum rapidity in establishment of the diagnosis and highly qualified urgent surgical intervention. Echocardiography is the most informative as well as quick method of noninvasive diagnostics of penetrating cardiac injuries.



## Case report

Our patient was a 64-year-old male, smoker, with a history of arterial hypertension and hyperlipidemia. In the past, he had a suicide attempt by hanging after his daughter's car accident. In this suicide attempt, he stabbed a 20 cm long knife to his chest after an argument with his wife. The patient stabbed himself in the presence of his wife who called the ambulance. When the ambulance arrived, the patient had shallow consciousness, and he was lying on his left side. Cardiopulmonary resuscitation in duration 10 min was initiated for circulatory instability with the need of catecholamines administration. Then the patient was transferred to emergency department. On arrival the Glasgow Coma Scale was 3, normal oxygen saturation on artificial ventilation, blood pressure was 105/83 mmHg with a small support of norepinephrine. An electrocardiogram showed normal sinus rhythm with heart rate 99 beats per minute. On physical examination, there was a weakened breathing left basal, stab wound approx. 5 cm to the left of the sternum at the

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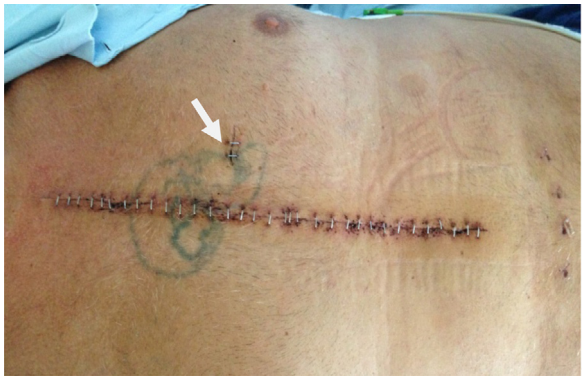

**Fig. 1 – Stab wound approx. 5 cm to the left of the sternum at the level of the nipple.**

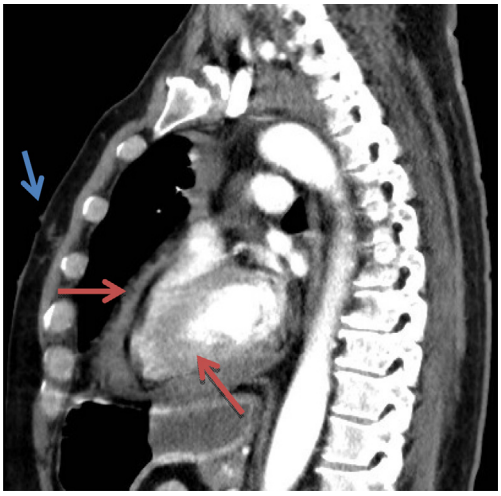

**Fig. 3 – Contrast enhanced sagittal CT image. Blue arrow shows the entry point of sharp object in soft tissues. Red arrows point to hemopericardium.**

level of the nipple (Fig. 1). He had no murmur on auscultation. Laboratory tests revealed abnormal values in serum for: alcohol 0.3 per mille, hemoglobin 103 g/l, INR 1.49 R, lactate 7.4 mmol/l, high sensitive troponin T 0.109 μg/l, and myoglobin 187 μg/l. 1052 ml of frozen plasma, 1047 ml of blood transfusion, 2 g of fibrinogen, 1000 ml of crystalloid solutions, antifibrinolytic and hemostyptic therapy were applied. Transthoracic echocardiography demonstrated only fluidothorax (suspicion for hemothorax) with evidence of thrombus. The heart could not be displayed by the standard projections. Computed tomography (CT) scan revealed left hemothorax with the oppression of the front left lung wing and the compression of the mediastinum to the right side. Next finding was hemopericardium wide up to 12 mm without contrast leak detection from cardiac chambers, although a discontinuity in the pericardium of the left ventricle could not be excluded (Figs. 2–5). Surgeon performed drainage of the left hemithorax, with the drainage of approx. 1300 ml of blood. The patient showed a further drop in blood pressure with the need of increased catecholamine administration. The patient was immediately transferred to the cardiac surgery department for surgical revision. Emergency surgery was performed in the patient with cardiac tamponade and with initial blood pressure 40/30 mmHg.

Medial sternotomy was performed, the pericardium was opened and blood and blood clots were evacuated. After releasing the amount of pericardial fluids, immediately the circulation was stabilized. Examination of the heart revealed a stab wound on the front of the right ventricle in the range of about 1 cm. There was no active bleeding. The wound was sutured with the aid of mesh stripes. About 1500 ml of blood with blood clots was removed from left hemithorax. Drains were placed in the pericardial and thoracic cavity. After the procedure a small dose of norepinephrine was needed and early extubation was performed. Postoperative 2-dimensional echocardiogram revealed no intracardiac shunt. On the next

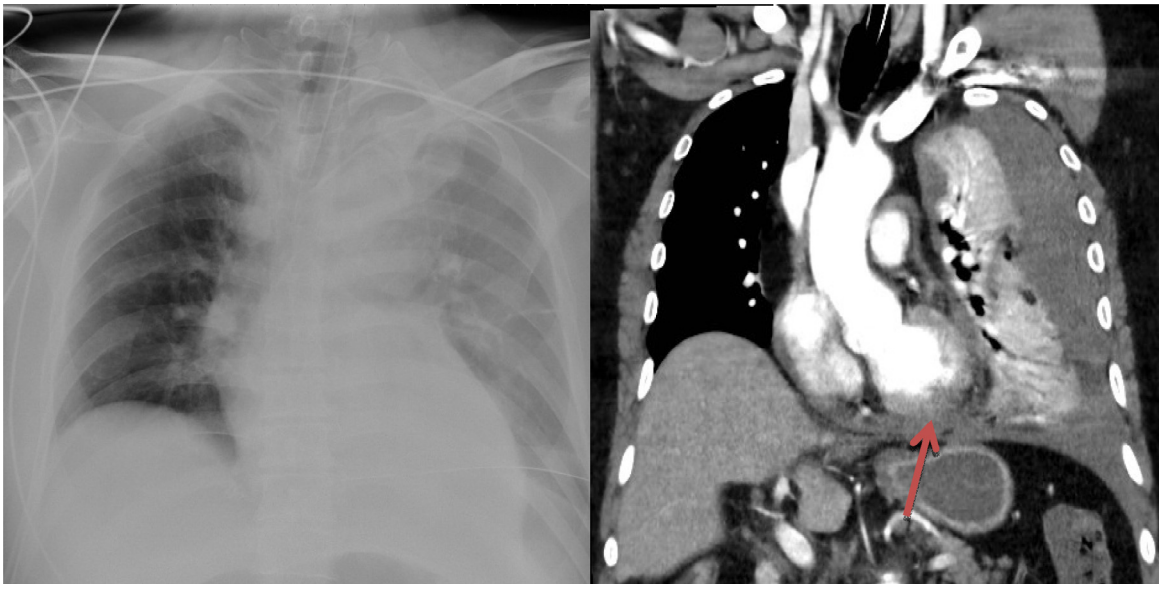

**Fig. 2 – Chest X-ray and coronal CT image. Extensive hemothorax and atelectasis on the left side. Extensive hemopericardium is seen on the CT image on the right side.**

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