

Unexpected Cardiac Arrest due to Extrapericardial Tamponade: Beware of Hemomediastinum!

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Abstract

Cardiac tamponade resulting from hemopericardium after a thoracic trauma is a relatively common occurrence. We report on 2 cases of extrapericardial cardiac tamponade, a condition that is definitely less common although potentially life threatening.

Both patients underwent sternotomic cardiac decompression and were transferred to ICU: the first patient died of neurological damage, the second patient was discharged on day six after surgery. The aim of the present report is to focus on the hemomediastinum, and in particular to stress the fact that a chest trauma apparently stabilized can suddenly lead to an extrapericardial tamponade.

Keywords: Trauma; Cardiac arrest; Hemomediastinum

Introduction

In the presence of a post-traumatic hemomediastinum an aortic contrast-enhanced CT scan [1] is indicated. If vascular lacerations are reliably ruled out, the hemomediastinum is generally self-limiting.

In the two cases herein presented the growing hematomas generated a progressive compression on the heart that hesitated in cardiac extrapericardial tamponade resulting in cardiac arrest. In both cases the laceration of the left internal mammary artery was confirmed intraoperatively.

Case 1

A 65 year old man was brought to Emergency Department (ED) after an unintentional fall from 4 meters height. On admission the blood pressure was 110/60 mmHg, the heart rate was 130 bpm, the hemoglobin was 12,6 g/dL and the Glasgow Coma Score was 14. The patient underwent a CT scan but, during imaging acquisition, the clinical parameters worsened rapidly and an oro-tracheal intubation was required to optimize airway management.

The CT scan revealed fracture of the sternum with hemomediastinum probably generated by the tearing of the left internal mammary artery, a complex fracture of D7-D8-D9 with posterior hemomediastinum and a bilateral pleural effusion (Figure 1). Pericardial effusion was reliably ruled out.

Soon after the patient had a cardio-pulmonary arrest: cardiopulmonary resuscitation (CPR) and advanced life support (ALS) was administered but only a partial haemodynamical compensation was obtained.

The patient was then transferred to Operatory Room (OR) where an emergency sternotomy was performed due to the onset of a second

cardio-pulmonary arrest. As a result cardiac haemodynamic and electric activity improved spontaneously a few seconds after the sternotomic decompression. No further resuscitation manoeuvres were necessary. Once the vital signs stabilized, the left internal artery was stiched and bilateral pleural chest tube positioned.

The patient was transferred to the Intensive Care Unit and his haemodynamic conditions remained stable although brain activity remained compromised until death.

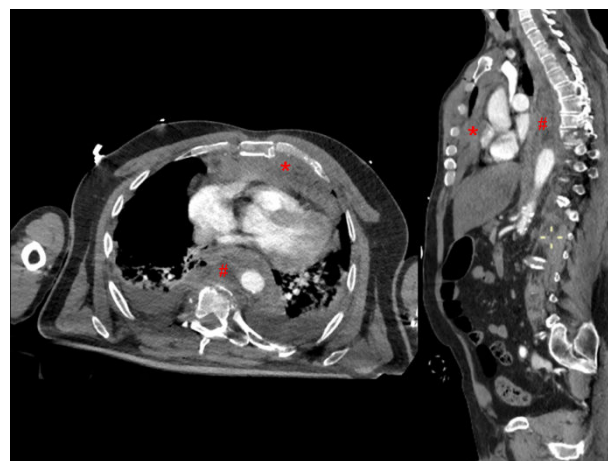


Figure 1: Blunt trauma. The heart is compressed from both sides: *an anterior mediastinal haematoma due to bleeding from the tearing of the left internal mammary artery, #a posterior mediastinal haematoma due to multiple spine fractures.

Case 2

A 78 years old female patient was admitted to the ED of our hospital because of a stab wound in the anterior chest wall 5 cm below the clavicle. The blood pressure was 80/40 and the heart rate was 60 bpm. Glasgow Coma Score was 15. Infusion of crystalloid fluid and red blood cells was initiated.

A subsequent whole body chest CT scan revealed (Figure 2) a hemomediastinum probably generated by the tearing of the left internal mammary artery and a bilateral pleural effusion (not a pericardial effusion).

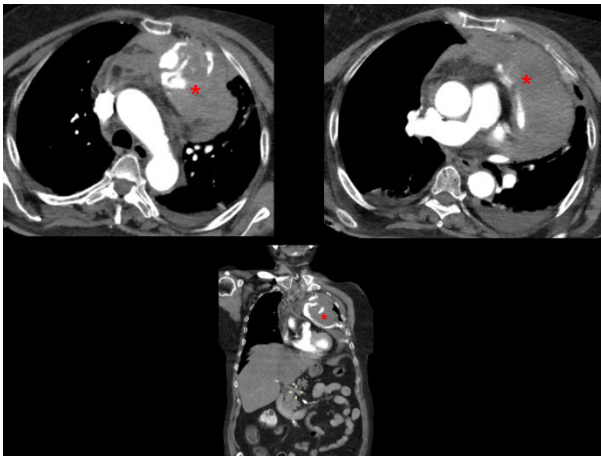


Figure 2: Stab wound. The heart is compressed by a rapidly growing hematoma, *due to bleeding from the tearing of the left internal mammary artery.

The patient was immediately taken to OR and intubated. Bradycardia and a cardio-pulmonary arrest followed. An emergency sternotomy was then performed. Electrical and mechanical cardiac activity restored few seconds after the chest decompression due to the sternotomy. No further resuscitation manoeuvres were necessary since vital parameters remained stable. Left internal mammary artery was stiched and the pleural spaces were inspected. A left chest tube and a mediastinal tube were positioned. The hematoma was partially removed and the patient was transferred to the Intensive Care Unit. Postoperative course was uneventful and the patient was discharged on day 6.

Conclusion

Post-traumatic isolated mediastinal hematoma can lead to cardiac tamponade in absence of intra-pericardial effusion [2]. The presence of a blush of bleeding within the hematoma must be always carefully evaluated, even in those cases in which the clinical conditions are not critical. It is possible, infact, a sudden worsening of the clinical conditions caused by the extrapericardial cardiac tamponade. A simple "decompressive sternotomy" may allow thoracic or emergency surgeon to relieve the pressure on the heart directly solving a cardio-circulatory arrest.

References

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