ePoster

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"Fixing a Broken Heart"

A Case Report of Hemopericardium Secondary to Penetrating Injury to the Main Pulmonary Artery

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INTRODUCTION

One of the highest mortality of injury accounts to the chest with 60% risk on some studies. 9.5% of which results in stabbing injury which leads to 25% of deaths in the United States [11] [1]. On the other hand, one study in the Philippines shows that 89% of penetrating chest injury was seen on the chest having a morbidity and mortality rate of 3% and 1.30% respectively. An immediate tamponade can result on penetrating injury to the great vessels of the heart including the main pulmonary artery with more than 70% of mortality rate [9].

AIM

Prompt recognition and assessment in regards to patient's hemodynamic status would determine proper evaluation and management [9]. Here we present a 35 year old male who sustained an intrapericardial injury to the chest which involves the main pulmonary artery.

METHODS

Presentation of the Case.

This is a case of a 35 year old male who came in at the emergency department due to stab wound on his left chest (Figure 1).

Figure 1.

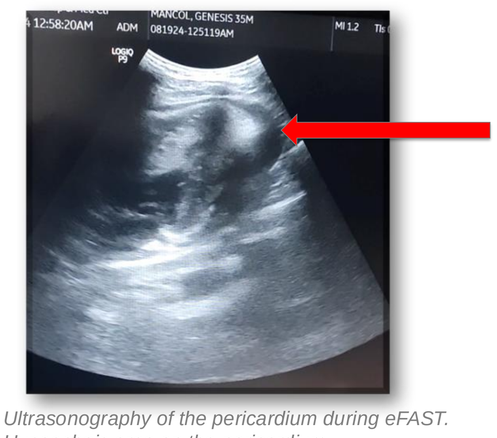
Punctured wound on the left anterior chest

After being stabbed by an ice pick, patient was seen 1 hour and 54 minutes post injury. Upon arrival, he was tachycardic and hypotensive at 120 beats per minute and 80/60 mmHg respectively. Patient was hooked to 1L of plain Lactated Ringers and noted that blood pressure was maintained at 90/60 mmHg after fluid challenge. Chest Xray (Figure 2) and extended Focused Assessment with Sonography for Trauma (Figure 3) was done which shows a widened mediastinum and FAST positive on the pericardium.

Figure 2.

Chest Xray at the Emergency Department.

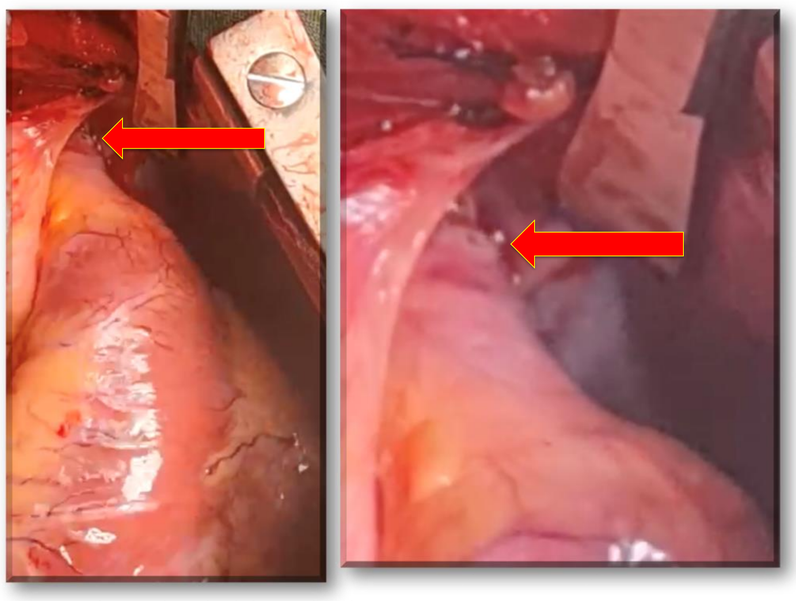
Figure 3.



Ultrasonography of the pericardium during eFAST. Hypoechoic area on the pericardium.

Patient remained unresponsive to resuscitative efforts and was then sent for Exploratory Sternotomy. Intraoperative findings of 200cc of hemopericardium with 0.3cm punctured injury on anterior main pulmonary artery (Figure 4).

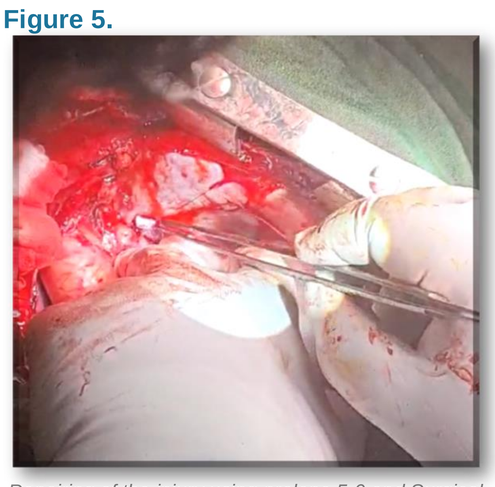
Figure 4.



Punctured wound on the left anterior chest

Upon entering the mediastinum, evacuation of hematoma and inspection done. No cardiac injury on posterior area hence we proceed to repair the pulmonary artery by laying the surgical felt and doing primary suture using prolene 5-0 followed by washing with Sodium Chloride Irrigating solution (Figure 5).

Figure 5.



Repairing of the injury using prolene 5-0 and Surgical Felt

Intraoperatively, patient has no episodes of hypotension and with approximately 250cc of blood loss. Closed Tube Thoracostomy was placed on right hemothorax and anterior mediastinum with a Jackson Pratt Drain inserted to the posterior Mediastinum to monitor output and to help maintain the left lung expanded (Figure 6).

Figure 6.

1. CTT Left: Right hemithorax
2. CTT right: Anterior Mediastinum
3. JP drain: Posterior Mediastinum

Patient was transferred to Surgical Intensive Care Unit post operatively and hooked to a thoracic pump in order to assist the chest tube to maintain the left lung expanded. He was transfused with 2 units of packed RBC. Course in the wards was unremarkable. Chest tubes and JP Drain removed on post operative day 2, was transferred to regular ward on day 3 and was discharged well and stable on post operative day 4. Follow up at the out-patient department on 9th post operative day where he was seen with no subjective complains, begins to return on his daily house hold activities and with dry coapted wound. (Figure 7).

Figure 7.

Post operative wound during 9th post operative day at the out-patient department

RESULTS

Discussion

In cases of thoracic trauma, only small percentage are pulmonary artery injuries making this injury a rare and lethal. The symptoms of transection/rupture/laceration category as seen on the case discussed includes cardiac arrest and hemodynamic instability due to hemorrhage or cardiac tamponade. Since the injury of PAI is from the right-heart system, there is a low pressure of hemorrhage. Such symptoms would lead to suspicion of injury to PAI [8,9]. Diagnostic techniques can be done to determine any vascular injury to the chest where CT Aortography is the gold standard, but this method requires patient to be stable for transport which also adds time prior giving the definitive management. In an unstable patients requiring stabilization, the use of extended FAST is an immediate way to localized the injury where the start should be at the area where there is the highest suspicious of injury for the definitive management [6,12]. Appropriate surgical management should not be delayed to those patient who do not or partially respond with initial resuscitation. In patients who are qualified for salvage post injury cardiac arrest, immediate thoracostomy is required as a part of initial resuscitation. On the other hand, to optimally approach if there is an injury to the intrapericardial pulmonary artery, median sternotomy is done [9,12]. Direct pressure and primary repair can be done if the injury is located on the anterior pulmonary artery [6].

CONCLUSIONS

Systematic approach with the use of standard of care in trauma is still the method in managing chest trauma. Most patients' death for penetrating chest injury are due to vascular injury hence, early detection and diagnosis if patient needs to undergo surgery is a crucial part for survival. Because the pulmonary artery has a low pressure, further deterioration was not seen after initial resuscitation to give ample time for the definitive surgical management [11,12].

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