

RESEARCH ARTICLE

RUPTURED POST-TRAUMATIC INTERCOSTAL PSEUDO-ANEURYSM: CASE REPORT AND A REVIEW OF THE LITERATURE

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INTRODUCTION

Intercostal pseudo-aneurysms are an extremely rare complication to intercostal medical procedures or blunt and penetrating trauma with only a handful of cases described in the English literature (Vajtai, 2015). We present the case of a man suffering from a ruptured intercostal pseudo-aneurysm three weeks after suffering from blunt thoracic trauma. We also present a review of the current literature.

Case

We present the case of a previously healthy 48-year-old male brought to the ER by ambulance due to increased respiratory distress and syncope. Four weeks prior he had fallen at home and struck his thorax, after this he experienced pain from the left side of the thorax. For 2-3 days prior to his arrival he had started to experience respiratory distress, fatigue and had been bedridden. On the day of arrival, he had lost consciousness and suffered involuntary release of urine and feces. His ECG showed an atrial fibrillation at 170 beats/min and his blood pressure was 140/50 mmHg. Pulse oximetry was 98% at 40 breaths a minute and on auscultation the base of the left lung detected dampened respiratory sounds, also there was a visible hematoma in the same area. The patient is sent for a CT-scan that showed a large left side hemothorax, displaced fractures in rib 7-9 on the left side and a sub-diaphragmatic hematoma with small amounts of free gas suggesting diaphragm rupture. A chest tube is inserted and 2 liters of blood mixed with pus drains out through it but the patient remains hemodynamically stable. The patient is placed on Piperacillin-Tazobactam and Tobramycin antibiotics and transferred to the intensive care unit.



Fig. 1.

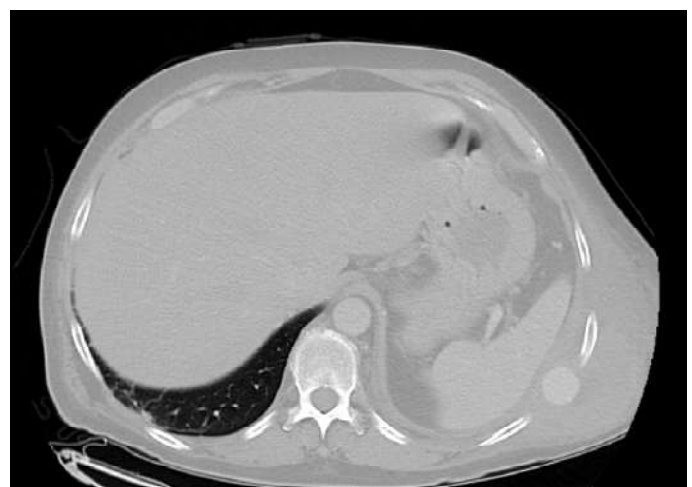


Fig. 2.

Fig. 1 and 2. The second CT-scan shows a hematoma in the chest wall and an intercostal pseudo-aneurysm next to the displaced fracture in 9th rib

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In the intensive care unit, the patient is initially intubated and an additional pigtail drain is placed in an encapsulated fluid filled area seen on the CT-scan believed to be an empyema, pus continually empties through this drain for several days. The patient gradually improves and both drains are removed and the patient is moved to the surgical ward while awaiting surgical rib plating to stabilize the chest wall. Before the operation the patient quickly develops a high fever and a swelling, and in the thoracic wall is noted, the patient is sent for a new CT-scan. The second CT-scan shows a hematoma in the chest wall and a suspected intercostal pseudo-aneurysm next to the displaced fracture in 9th rib, the radiologists have trouble visualizing the 9th intercostal artery and believe it to be in spasm making successful embolization unlikely. To drain the empyema and treat the pseudo-aneurysm a thoracotomy is performed, a drain is placed in the pseudo-aneurysm and two drains are placed in the thorax. No diaphragmatic rupture is found.

DISCUSSION

True intercostal aneurysms most commonly exist in conjunction with diseases like aortic coarction, Kawasaki's disease, neurofibromatosis, systemic lupus erythematosus or Ehler-Danlos syndrome (Carr, 2013). Intercostal pseudo-aneurysms are formed after some form of insult to the intercostal arteries, either traumatic or iatrogenic. Traumatic causes include both blunt (Nemoto, 2014 and Gutierrez Romero, 2014), and penetrating trauma (Sekino, 2005). Medical procedures account for the majority of reported cases in the literature. Iatrogenic causes of intercostal pseudo-aneurysms include thoroscopic lung resection (Kawai, 2009) fine needle lung biopsy (Melloni, 2012) transaortic transcatheter aortic valve implantation (Lenders, 2012), thoracocentesis (Long, 2012) and liver biopsy (Vajtai, 2015). Patients with ruptured pseudo-aneurysms presented with symptoms secondary to hemothorax but were diagnosed before rupture and instead presented with only a pulsating mass in the chest wall (Vajtai, 2015 and Lenders, 2012). The time from insult to pseudo-aneurysm rupture varies from hours (Vajtai, 2015 and Long, 2012) to weeks in our case and three months in another (Lenders, 2012), but the majority of cases suffered rupture within days of the insult.

Symptoms

Pseudoaneurysms usually present as a painful, tender, pulsatile mass. The overlying skin is sometimes erythematous. Pseudoaneurysms can sometimes be confused with abscesses. Symptoms varied but hypovolemic shock (Vajtai, 2015 and Gutierrez Romero, 2014) and respiratory distress (Kawai, 2009; and Long, 2012), where the most common. In all cases hemothorax was then visualized radiologically and in some cases angiography was performed to better visualize the aneurysm.

In the hemodynamically unstable patient thoracotomy may be indicated due to massive hemorrhage but in the hemodynamically stable patient embolization is usually the first option. Care must be taken to ensure that collateral bloodflow to the pseudo-aneurysm is not missed. If the pseudo-aneurysm is diagnosed prior to rupture ultrasound guided percutaneous thrombin injection is an alternative (Vajtai, 2015).

Conclusions

Although a very rare complication a ruptured intercostal pseudo-aneurysm is also a serious and potentially life-threatening one that is especially important for surgeons and doctors who perform procedures where damage to intercostal arteries is a possibility.

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