EMERGENCY CASEBOOK

Case of the month: Intrathoracic rupture of a pectoral muscle haematoma

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Blunt chest wall trauma is a common reason for patients attending emergency departments. It may be the result of assault, falls, or motor vehicle accidents. Injuries sustained range from minor soft tissue damage and uncomplicated rib fractures to life threatening thoracic insults. Pectoral muscle haematomas following rib fractures are rare. We report such a case and discuss the subsequent clinical course and management.

CASE REPORT

A 31 year old male intravenous drug user, presented to our emergency department two weeks following a blunt trauma assault, during which he sustained a right sided chest injury. His complaint of right anterior chest pain exacerbated by deep inspiration, coughing, and movement, was associated with pyrexial episodes and night sweats. He was not taking any medication at the time, but was smoking 10–15 cigarettes per day.

Clinical examination revealed right sided bronchial breathing, confirmed by the radiographic presence of right middle zone consolidation. In addition, the patient was noted to have a comminuted right third rib fracture. He was pyrexial, tachycardic, and tachypnoeic. A small haematoma was also noted on the right anterior chest wall. He was admitted under the care of the medical receiving team for intravenous antibiotic treatment of his pneumonia and improved over the following days. An echocardiograph, to exclude bacterial endocarditis, showed normal findings and a ventilation/perfusion scan was interpreted as being low risk for pulmonary thromboembolism.

During the patient's admission, an ultrasound scan of his right anterior chest wall confirmed the presence of fluctuant haematoma and small extrapleural component due to a comminuted rib fracture at the costochondral junction. As the haematoma appeared to be static in size, it was felt that surgical intervention was not necessary. With clear clinical improvement and settling of pyrexia, he was discharged with outpatient follow up after two days of hospital treatment. It is unclear if the patient was anticoagulated while he was an inpatient.

Six days after discharge the patient re-presented to the emergency department with a painfully swollen and erythematous left leg, which was confirmed by Doppler ultrasound and venometry to be an extensive deep vein thrombosis (DVT). He was appropriately commenced on a weight based low molecular weight heparin (LMWH)—enoxaparin 90 mg subcutaneously once daily for six weeks.

Eighteen days later he again presented to the emergency department complaining of a five day history of increasing swelling, pain, and tenderness to his right anterior chest wall. Examination confirmed the presence of a large, tense haematoma to the right anterior chest wall, which had been exacerbated by LMWH treatment for his DVT (fig 1). Physiological observations and recordings were normal. The case was discussed with the medical team who advised that, given the presence of a large DVT, it would be necessary to

continue anticoagulation treatment. A repeat chest x ray showed improvement when compared with the previous films, with complete resolution of the previously noted consolidation.

An ultrasound of the chest four days later revealed an "8 cm × 5 cm × 3 cm intra-pectoral haematoma to the right chest wall with no evidence of intra-thoracic extension". Physiotherapy treatment with ultrasound was considered but was contraindicated due to the patient continuing on anticoagulation therapy (personal communication).

Five days later, the patient re-presented to the emergency department. He was once again dyspnoeic, pyrexial, tachycardic, and hypotensive. A chest x ray revealed a right basal pleural effusion. Repeat ultrasound revealed a large right pectoral haematoma partially decompressed by intercostal rupture into the right pleural space, causing a large right sided pleural effusion seen on both x ray and ultrasound. An intercostal drain was inserted under aseptic technique, and 200 ml of purulent fluid was drained from which *Streptococcus anginosus* was cultured. A computed tomographic scan of the chest revealed a persisting loculated empyema. The patient was transferred to the regional cardiothoracic unit for further management.

DISCUSSION

Pectoral muscle haematoma is a rare complication of chest wall trauma. Our literature search failed to reveal any previous recordings of such complications being exacerbated by treatment with LMWH. We also failed to identify any previous reports of intrathoracic rupture of pectoral haematomas. However, in this report we present such a case, with sequential supporting radiological evidence.

Several publications have mentioned both predictable complications of blunt chest wall injury and rib fracture including pneumothorax, haemothorax, surgical emphysema, atelectasis, and pneumonia.^{1,2} Others have commented on more unusual complications such as abdominal organ damage including gastric perforation.² It is further recognised that the mainstay of treatment for rib fractures is adequate analgesia and meticulous respiratory care. Most patients can be managed at home, but some need admission for oxygen therapy, analgesia, ventilation, and physiotherapy.

Figure 1 Large pectoral haematoma. Informed consent was obtained for publication of this figure.

In intravenous drug users, LMWHs are frequently used for the treatment of thromboembolic disorders.³ When administered on an accurate weight based basis, the effects of LMWHs are predictable and reproducible. They are thought to interact less with platelets, thereby reducing the degree of platelet function inhibition and subsequently reducing bleeding risks. This theoretical advantage has not been substantiated in clinical studies, and therefore such treatment is not risk free. Rectus sheath haematoma and retroperitoneal haematoma are previously recognised and recorded complications of LMWH therapy.⁴

In intravenous drugs users who develop thromboembolic problems such as DVT, a six week treatment of weight based LMWH is the appropriate choice.³ However, predictably this will increase bleeding tendencies and exacerbate haematoma formation. Clearly our patient developed a right sided pneumonia as a result of his initial rib fracture. This was appropriately investigated and treated. His subsequent DVT was also treated, exacerbating his pectoral haematoma, which may have become secondarily infected. Eventually this led to rupture into the chest cavity, requiring intercostal drain insertion. The aspirated pleural fluid cultured *S. anginosus*, which is recognised as a causative agent in serious purulent infections.

CONCLUSION

This case report highlights the risks and potential problems of using LMWH anticoagulation when patients have been

involved in recent and relatively minor trauma. However the risks and benefits need to be weighed on a case by case basis. Proved thromboembolic disease is potentially life threatening, and it was on this basis that the LMWH treatment was considered to be indicated in the early management of our patient.

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Informed consent was obtained for publication of the person's details in this report and fig 1.

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IMAGES IN EMERGENCY MEDICINE

Spontaneous rupture of axillary vein simulating elder physical abuse

An 87 year old woman presented to our emergency room with an extensive haematoma in the thoracoabdominal region (fig 1). The patient had been well until about six days before coming to the emergency department, when she developed a swelling in the right axillary region. At the initial examination a possibility of physical abuse was raised.^{1,2} A nodule, 3 cm in diameter, was palpable in the right axilla. Haematologic and coagulation values were normal. A computed tomography scan of the thorax showed a nodule in the right axillary region. Colour flow Doppler revealed that the nodule was associated with the right axillary vein. This proved that our initial suspicion of physical abuse was wrong; after clinical evaluation and complementary investigations, the unusual diagnosis of spontaneous rupture of axillary vein with subcutaneous haematoma was made. This case highlights the need for exclusion of all differential diagnoses, including uncommon conditions, before arriving at the diagnosis of physical abuse.

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Figure 1 Extensive haematoma in the thoracoabdominal region in an 87 year old woman. Informed consent was obtained for publication of this figure.

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