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NONOPERATIVE MANAGEMENT OF A LARGE EXTRAPLEURAL HEMATOMA AFTER BLUNT CHEST TRAUMA

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□ **Abstract—Background: An extrapleural hematoma (EH) is an uncommon and potentially life-threatening condition defined as the accumulation of blood in the extrapleural space between the parietal pleura and the endothoracic fascia. EH usually occurs after blunt thoracic trauma causing fractures of the sternum and ribs, which can tear the intercostal or internal mammary vessels. Typical radiological findings of EH are a biconvex opacity on the involved hemithorax and the so-called displaced "extrapleural fat sign." Case Report: We present a case of a 36-year-old man with an isolated scapular fracture after a high-energy blunt chest trauma complicated with a large contralateral EH that was successfully managed nonoperatively with transcatheter arterial embolization (TAE) and image-guided drainage with a pig-tail catheter. To the best of our knowledge there is only one previous report describing a large EH after blunt thoracic trauma without rib fractures. Only two previous cases of large EHs have been treated initially with TAE, but both patients ultimately required open surgery. Why Should an Emergency Physician Be Aware of This?: Patients with EH can present with respiratory distress and hypotension, so early identification is important to facilitate proper treatment. EH has characteristic radiological findings, and contrast-enhanced computed tomography is not only the best imaging tool for confirming an EH, but also the best technique for detecting the source of the bleeding and other serious thoracic complications that may not be evident on chest x-ray studies.**

□ **Keywords—extrapleural hematoma; blunt chest trauma; nonoperative management; CT**

INTRODUCTION

An extrapleural hematoma (EH) is an uncommon and potentially life-threatening condition defined as the accumulation of blood in the extrapleural space. Unlike hemothorax (collection of blood between the visceral and the parietal pleural layers), an EH is an accumulation of blood between the parietal pleura and the endothoracic fascia, and usually occurs after blunt thoracic trauma causing fractures of the sternum and ribs. These fractures can tear the intercostal or internal mammary vessels. Patients with EH can present with respiratory insufficiency, hypotension, and anemia, so rapid establishment of a correct diagnosis is important to facilitate proper treatment. Typical radiological findings of EH are a biconvex or "D-shaped" opacity on the involved hemithorax and the so-called displaced "extrapleural fat sign" (1). The latter sign, when present on computed tomography (CT), is considered pathognomonic. To the best of our knowledge, there is only one previous report describing a large EH after blunt thoracic trauma without rib fractures, and only two previous cases of large EHs

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being treated nonoperatively with transarterial embolization (TAE). We present a case of a 36-year-old man with an isolated right scapular fracture in the setting of a high-energy blunt chest trauma complicated with a large contralateral EH that was successfully managed nonoperatively with TAE and percutaneous CT-guided drainage with a pig-tail catheter (PC).

CASE REPORT

A previously healthy 36-year-old male circus performer fell from a trapeze bar (about 8 m high) during a performance and was brought to our institution reporting intense pain localized to the posterior aspect of his right shoulder. On arrival, the patient was alert and conscious, hemodynamically stable (110/70 mm Hg), and an initial neurovascular examination was normal. Plain x-ray studies of his shoulder and thorax showed a fracture of the scapula but no rib fractures, pulmonary contusions, or signs of pneumothorax (Figure 1). Contrast-enhanced thoracic CT was not initially performed because the patient was hemodynamically stable and because his basic symptom (shoulder pain) could be explained by the fractured scapula seen on the x-ray studies. However, 12 h later, the patient's systolic blood pressure and hemoglobin levels decreased (80/40 mm Hg, hemoglobin 11.5 g/dL from a previous value of 14 g/dL), and he reported shortness of breath. He also coughed up a blood-tinged sputum. A second chest x-ray study showed an extensive left hemithoracic opacity (Figure 2). His hemodynamic condition improved (105/65 mm Hg) after aggressive fluid replacement, and the decision was made to perform a thoracic CT. Thoracic CT showed a massive biconvex left EH, a small left lower lobe contusion, and signs of extravasation of the contrast medium (active bleeding) originating from a small pseudoaneurysm of a left intercostal artery (Figure 3). An incomplete isolated fracture of the right scapula was confirmed; interestingly, there were no other fractures on the CT study (Figure 4). Because the patient's blood pressure decreased again (85/45 mm Hg), an angiography was immediately performed and the pseudoaneurysm was successfully embolized using gelatin-sponge particles. The patient's hemodynamic status stabilized (115/75 mm Hg), and the patient was admitted to the thoracic surgery department. A CT-guided 14Fr PC was placed into the large EH (Figure 5) with drainage of 1,400 mL partly clotted blood. The patient made a progressive good recovery, although fibrinolytic agents (100,000 IU urokinase) were administered through the PC into the

Figure 2. Supine chest x-ray study 12 h after admission shows a massive left pleural well-defined opacity.

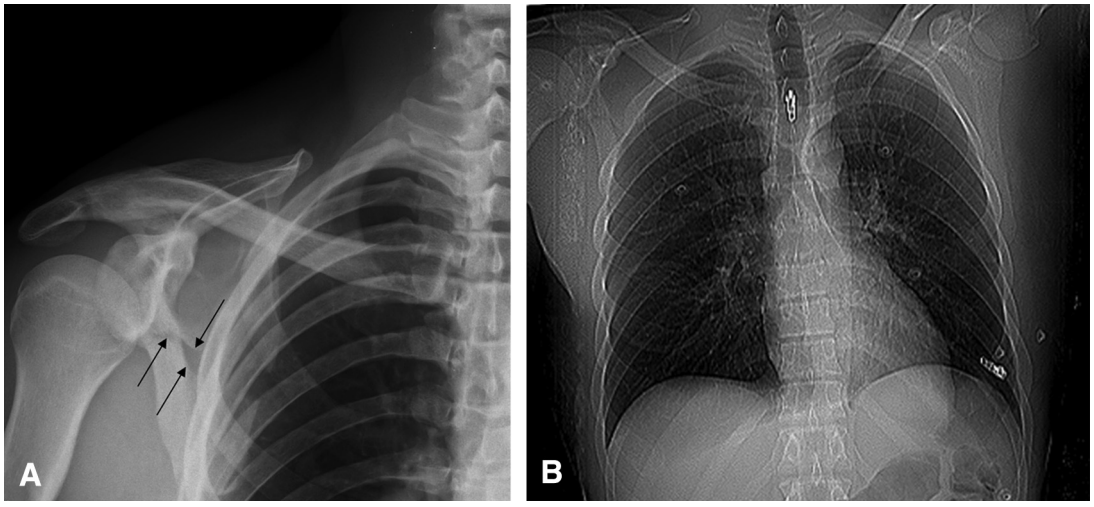

Figure 1. Right shoulder x-ray study (A) shows a nondisplaced scapular fracture (arrows). Supine chest x-ray study (B) shows no signs of rib fractures, pulmonary contusions, or pneumothorax.