

Blunt Aortic Injury and a Liver Laceration after a Motor Vehicle Collision

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Dilantin; Thyroxine; Hemoperitoneum

1. Case Report

An 80 year old male restrained driver was involved in a motor vehicle collision when his vehicle struck a tree. The patient was transported to a level 1 trauma center. He was alert and able to follow commands. He gave a past history of hypertension and hypothyroidism. His medications included dilantin and thyroxine but he could not recall the names of the blood pressure medications. The initial vital signs were as follows: Blood pressure – 145/85, Pulse – 73, Respiration -20. The oxygen saturation was 92%. The Glasgow coma Scale score was 15.

There was a bruise in the right thoracoabdominal region. The abdomen was soft but mildly distended. The initial FAST was negative. The pelvis was stable. There was no tenderness on palpation of the back and the peripheral pulses were normal. His motor strength was preserved in all extremities.

The initial chest x-ray revealed a widened mediastinum (Figure 1). The pelvic film was normal. An Arterial blood gas revealed a ph of 7.36 PCO₂ - 46 PaO₂ - 232 and HCO₃ -26.6 on 100% oxygen by face mask. The Hemoglobin was 12.6, Hematocrit - 38.3 and the white blood cell count - 13,000. The patient was taken to CT for a survey. A grade 3 liver laceration was evident along with hemoperitoneum (Figure 2). A right inguinal hernia was evident along with a suspected bile duct injury. Bilateral rib fractures and a teardrop fracture of the body of T3 were noted. A Grade 3 blunt aortic injury was detected (Figure 3).

The patient was admitted to the intensive care unit and an MRCP was performed. There was no evidence of an extrahepatic biliary injury. A follow-up abdominal CT with oral contrast was performed. There was no extra-luminal contrast and there were no findings supportive of bowel injury. The abdominal exam remained benign. The patient was monitored. Beta-blockade was

utilized to decrease aortic wall stress. Endovascular repair of the blunt aortic injury was performed. Post-operatively he developed a gram negative pneumonia that was successfully treated with meropenem. He began to follow commands again and a tracheostomy was performed because prolonged ventilator support was needed. He was transferred to long-term acute care for continued ventilator management, tolerating tube feedings and following commands.

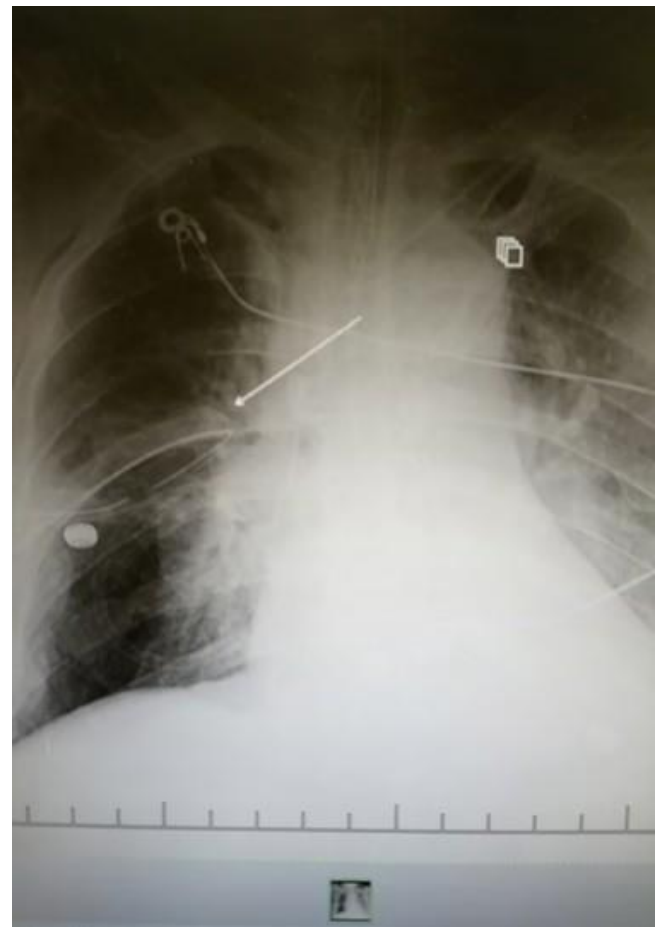


Figure 1:CXR

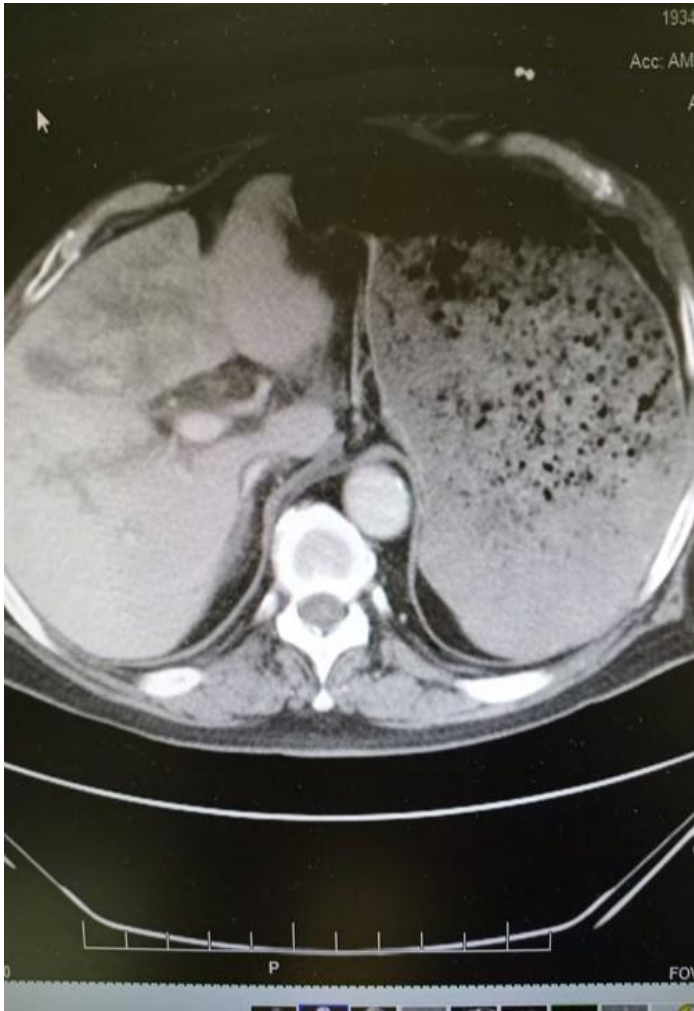


Figure 2: LIVER LACREATION

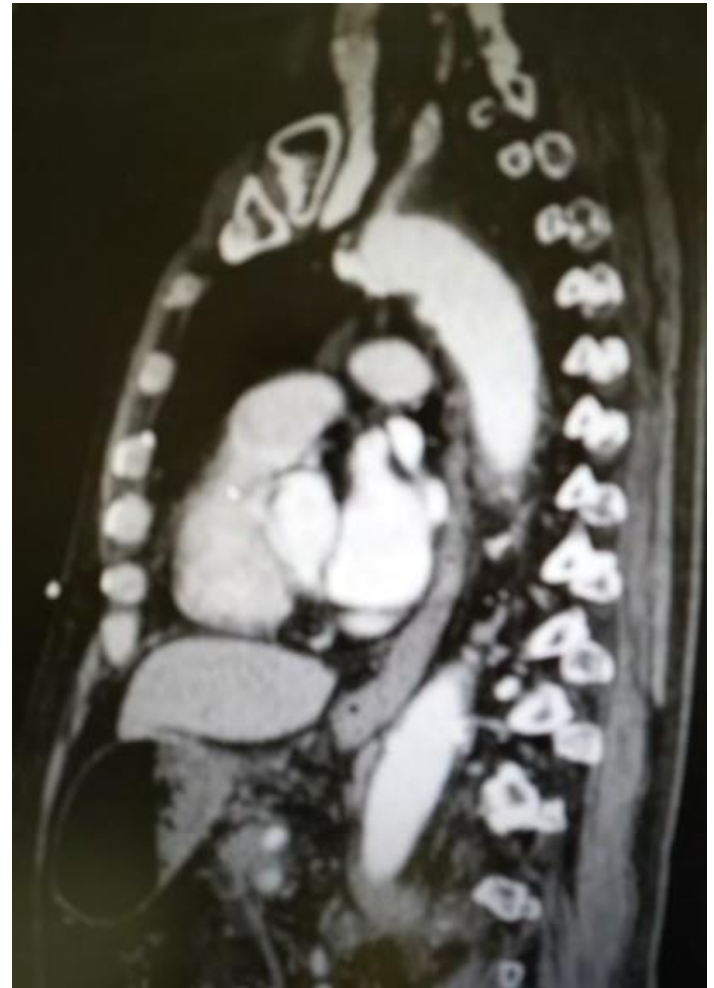


Figure 3: THORACIC AORTA

2. Discussion

The elderly make up a growing portion of the annual United States trauma population. Blunt trauma from falls and motor vehicle collisions represent the bulk of inciting causes for injury in this population [1]. In the case described we have an elderly patient with significant thoracic and abdominal injuries. The ATLS protocol is the starting point for evaluating any multi-system trauma patient [2]. Fortunately there were no clinical signs of a closed head injury and his initial vital signs were reasonable. The initial oxygen saturation of 92% is worrisome and was likely a harbinger of the presence of an occult pulmonary contusion. Bilateral rib fractures alone can set the stage for a subsequent pneumonic process [3-5]. The blunt aortic injury reflects the transmission of a powerful shock wave due to acute horizontal deceleration. The tear is usually just distal to the take off of the left subclavian artery. Endovascular repair has become the standard of care in the current era [6-8]. In preparation for surgery beta-blockade is essential to decrease the shear wall stress related to hypertension [8]. Age should not be used as a single determinant of care [9,10]. Elderly patients can recover from major injuries if meticulous care is implemented and complications anticipated and where possible prevented [10].

The success of non-operative therapy for significant liver trauma is predicated on the absence of hypotension [11]. The patient remained hemodynamically stable during a period of observation. Additional work-up in this instance excluded associated bowel injury or extrahepatic biliary injury. Given these findings, there was no need for abdominal exploration.

There are a number of published papers exploring the injury parameters best suited to predict futility of care in geriatric trauma. Injury severity score combined with co-morbidities seems inadequate in this regard [12]. Frailty has emerged as a useful marker for hospital course and subsequent discharge [13]. A scoring index focused on trauma has shown utility in assessing the risk of morbidity and mortality [14,15]. The trauma frailty index can help to predict discharge destination. The patient described required additional care because he was ventilator dependent. He was transferred to a long-term care facility without focal neurological deficits.

This 80 year old man with substantial truncal injury was managed successfully with endovascular repair of a blunt aortic injury in the setting of grade 3 liver trauma. His care emphasizes that a careful clinical assessment and treatment plan based on sound trauma principles must be used in all geriatric patients and that care should never be withheld solely because of age.

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