A Rare Case of Raised Blood Pressure with Adrenal Gland Haematoma after Trauma

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ABSTRACT

Adrenal gland haematoma, although associated with significant morbidity and mortality, is a rare diagnosis in trauma patients and poses a diagnostic challenge due to non-specific presentation and absence of biochemical markers. A high index of suspicion is required for saving precious lives. The authors report an unusual case of raised blood pressure along with an adrenal gland haematoma. The patient presented with pain in the left shoulder, left side chest, and upper abdomen after trauma. His elevated blood pressure led to a workup, including contrast-enhanced computed tomography (CECT) scan of the abdomen, which revealed a right adrenal gland haematoma, besides left scapular and rib injuries. The patient was managed conservatively and made a full recovery.

Key Words: *Adrenal gland, Haematoma, Hypertension, Trauma*.

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INTRODUCTION

Trauma to the adrenal glands is rare owing to their anatomical location within the retroperitoneum and the protection by surrounding soft tissues.[1] Such injuries are also difficult to diagnose due to a non-specific clinical presentation and the non-availability of biochemical markers.[1] However, such injuries are associated with higher severity of injury and grave patient outcomes, including increased mortality rates.[2] Isolated injuries to the adrenal glands have also been documented after trauma.[1] Adrenal gland haematomas presenting with increased blood pressure are even rarer.

The authors present one such case of raised blood pressure, along with an adrenal gland haematoma in a trauma patient.

CASE REPORT

A 40-year male, with no known comorbidities, presented on 31st May 2024 after an explosive device blast, with multiple splinter injuries to the chest and upper abdomen. He presented eight hours after sustaining the trauma. He was evaluated as per the Advanced Trauma Life Support (ATLS) protocol. His airway was clear, bilateral air entry was present, with no visible bleeding, and a normal neurological status. His exposure was performed for covert injuries.

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He had pain in the left shoulder, left side of the chest, and upper abdomen. His pulse and blood oxygen saturation were within normal limits, and he was afebrile. However, his blood pressure was 180/110 mmHg. The abdomen was soft, but mild tenderness was present in the right hypochondrium. Fluid resuscitation was performed with one litre of the Ringer's Lactate. He was made pain-free with intravenous injection of Ketorolac 30 mg, and anxiety was alleviated by counselling in detail. His baseline investigations were performed.

His plain computed tomography (CT) scan of the chest revealed a comminuted fracture of the left scapular blade and the left 6th, 7th, 8th, and 9th ribs, along with pulmonary contusions. He was also found to have a right adrenal gland hypodense lesion measuring 5.6 × 2.5 cm on CT scan of the abdomen. His haemoglobin was 16.4 g/dL (normal range: 13.0-17.0 g/dL), total leucocyte count was 28.3 × 10^9/L (normal range: 4.0-10.0 × 10^9/L), and neutrophil count was 79% (normal range: 40-70%). Serum alanine aminotransferase (ALT) was 384 U/l (normal range up to 42 U/l), bilirubin was 9 umol/l (normal range: 3.4-17.1 umol/l), alkaline phosphatase was 117 U/L (normal range: 65-306 U/L), creatinine was 82 µmol/L (normal range: 62-115 µmol/L), and C-reactive protein was 97.2 mg/L (normal range: <10 mg/L). His blood sodium, potassium, and glucose levels were within normal ranges.

His blood pressure was persistently raised over the next two days, despite adequate pain relief and resuscitation. A contrast-enhanced CT (CECT) scan of the abdomen and pelvis was therefore planned, which revealed an ill-defined, faint, non-enhancing, hypodense area measuring 2.9 × 3.5 × 5.1 cm in the right lobe of the liver, not extending beyond the liver capsule, suggestive of American Association for the Surgery of Trauma (AAST) Grade II liver injury. He also had a small hypodense area

of 4.07 × 2.95 cm in the right adrenal gland, with surrounding ill-defined hyperdense fluid collection, extending around the upper pole of the right kidney and hepatorenal region with adjacent marked fat stranding, suggestive of post-traumatic haematoma of the adrenal gland (Figure 1).

Tablet losartan potassium (50 mg), an angiotensin receptor blocker, was started after consultation with a medical specialist, and he was managed with an antibiotic, a painkiller, and a proton pump inhibitor. Oral intake was encouraged, and he was mobilised out of bed. He made a good recovery; his blood pressure gradually returned to normal limits, and the laboratory parameters improved to within normal range. He was subsequently discharged after one week. The patient was advised to maintain a blood pressure chart and follow up after two weeks.

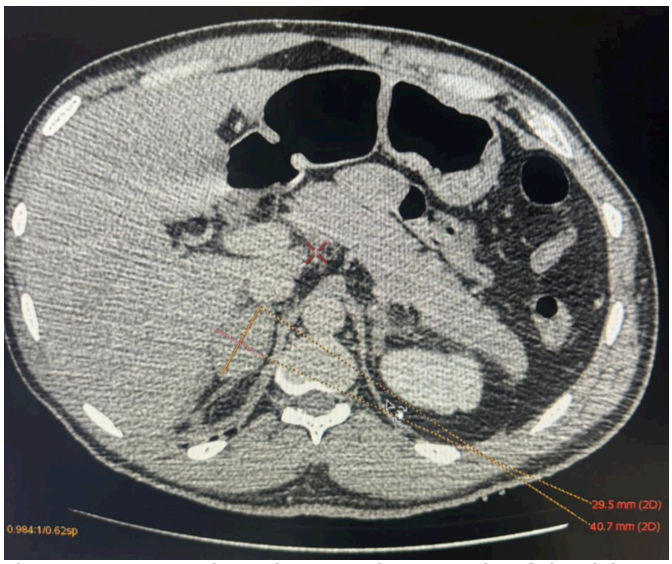

Figure 1: Contrast-enhanced computed tomography of the abdomen showing a right adrenal gland haematoma.

DISCUSSION

Adrenal haemorrhage is rare and can be post-traumatic or non-traumatic.[3] Its diagnosis is often challenging due to non-specific clinical presentations. A high index of suspicion is required so that the diagnosis is clinched in time to prevent adrenal insufficiency, which can be life-threatening.[3]

Adrenal glands have an abundant vascular supply, comprising 50-60 small arteries derived from three large arteries, whereas venous drainage occurs through a single vein. This unique arrangement is known as a vascular dam, by virtue of which the adrenal glands are prone to haemorrhage.[4] Apart from trauma, adrenal haemorrhage may occur from sepsis, malignancies, coagulopathy, and even COVID-19.[4]

Most traumatic injuries to the adrenal gland occur after blunt trauma and rarely after penetrating injuries.[5] These injuries may result in persistent haemorrhage, retroperitoneal haematoma formation, abscess formation, and life-threatening adrenal crisis.[5] Injuries are more common on the right side.[6,7]

Biochemical markers that may point towards diagnosis are hyponatraemia, hyperkalaemia, and hypoglycaemia.[5] However, these were normal in this patient. Leucocytosis and a rise in inflammatory markers occur after trauma and may be associated with sepsis.[8] CECT scan of the abdomen is the investigation of choice for suspected adrenal gland haemorrhage.[1,3] Magnetic resonance imaging is the most sensitive and specific investigation; however, it is not performed in acute settings.[6]

The management plan depends on the condition of the patient, including haemodynamic stability, severity of injury, injury to the contralateral adrenal gland, and comorbid conditions. Most patients are managed conservatively; however, minimally invasive procedures such as angiographic embolisation may be required.[1] Surgery remains the last resort. It is essential to establish whether the patient is having adrenal insufficiency early so that appropriate treatment is given. Most patients make a full recovery with conservative management. However, follow-up radiological investigations after six months are helpful for documenting complete resolution and exclusion of any haemorrhage associated with the underlying mass.[8,9]

This case was unique as an adrenal gland haematoma, along with raised blood pressure, is an unusual presentation after trauma. Schmidt *et al*. have described one such case of adrenal haemorrhage presenting with hypertension and deduced that raised intra-adrenal pressure by haematoma may induce reactive hyperplasia with excessive secretion of catecholamines, resulting in hypertension.[10] A high index of suspicion is required for the successful management of such patients.

PATIENT'S CONSENT:

Informed consent was obtained from the patient to publish the data concerning this case.

COMPETING INTEREST:

The authors declared no conflict of interest.

AUTHORS' CONTRIBUTION:

AHM: Conception, study design, data acquisition, drafting, and critical revision of the manuscript.
ZA, HR, MTM: Data acquisition, drafting, and critical revision of the manuscript.
All authors approved the final version of the manuscript to be published.

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