

Adrenal Trauma In The Absence Of Synchronous Intra-Abdominal Pathology.

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Citation

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Abstract

INTRODUCTION

Blunt Abdominal Trauma (BAT) is commonly associated with motor vehicle accidents, falls and victims of assault. The most commonly injured solid organ in BAT is the spleen [1]. However the small bowel, large bowel, pancreas, liver, bladder and kidneys may also be injured. Injury to the adrenal glands is a rare event [2,3]. We present the case of a young man who suffered an isolated adrenal injury after a two metre fall from a ladder.

CASE SUMMARY

A 42-year-old male patient self-presented to the emergency department of our tertiary referral centre following a work place accident. He was complaining of right upper quadrant pain secondary to a two metre fall from a ladder. He denied loss of consciousness or head trauma and had full recollection of the event and thereafter. There were no sequelae of neurological deficit.

The patient's past medical history included coarctation of the aorta which was treated surgically with an interposition aortic graft 14 years prior. He had been discharged from cardiology follow-up. There was no other significant past medical history nor was he taking any regular medications. He is a non-smoker with no recent history of drug or alcohol abuse.

Examination revealed a normal blood pressure, heart rate and other vital signs. He had a tender right upper quadrant and left wrist. There was mild abdominal guarding and rebound tenderness. There was no obvious bruising on his abdomen and a secondary survey was unremarkable.

Full blood count and serum biochemistry revealed an elevated white cell count ($17.2 \times 10^9/L$) and liver enzymes. GGT was 73 U/L ($n=7-64$), ALT was 386 U/L ($n=7-56$),

bilirubin was 24 $\mu\text{mol/L}$ ($n=0-20$) and lipase was 65 U/L ($n<100$). Contrast enhanced CT of the chest, abdomen and pelvis revealed an enlarged right adrenal gland with peri-adrenal stranding. This was consistent with an adrenal contusion. The kidneys and all other solid organs appeared normal.

Figure 1

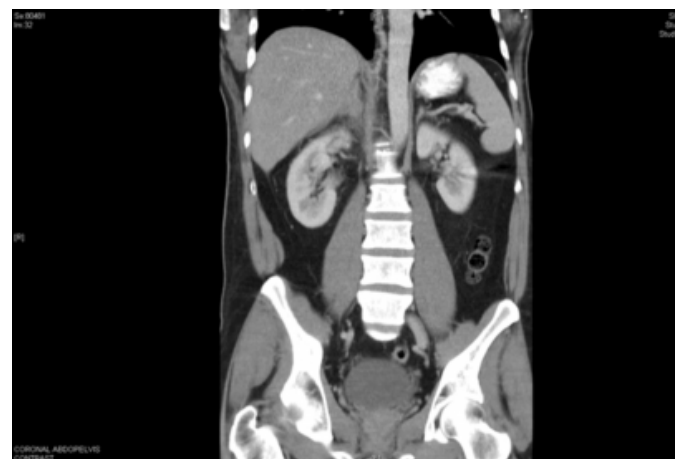


Figure 2

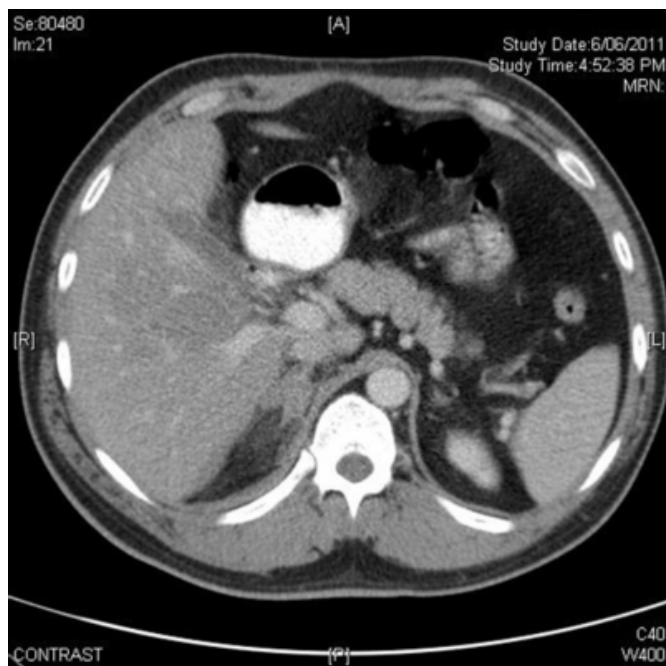
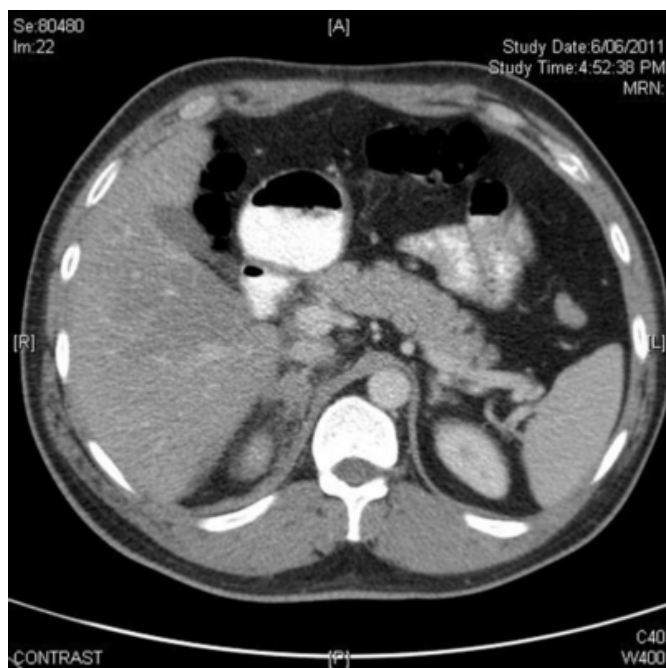


Figure 3



Wrist x-ray demonstrated a comminuted distal left radial fracture with mild dorsal angulation. Chest CT did not reveal any fractures or pneumothorax. The patient was admitted for observation and analgesia. The wrist fracture was managed with a plaster cast. The patient remained haemodynamically stable, and the liver function tests and WCC returned to normal. Once his pain was controlled with oral analgesia he was discharged home on day three; follow up was planned

for three months.

A follow up CT three months post trauma revealed a normal appearing right adrenal gland. There was no mass or cyst to predispose it to haemorrhage. The patient had recovered well and was asymptomatic.

Figure 4



Figure 5



DISCUSSION

Adrenal trauma is a rare event as the adrenal is a retroperitoneal structure well protected from external trauma by its surrounding structures (liver, ribs and kidneys). Isolated adrenal gland injuries, without any other intra-abdominal injury are even rarer. A retrospective study by Mehrazin et al revealed only eight cases of isolated gland injury over a 15 year period [2]. A total of 150 cases of adrenal trauma had occurred during this time. Stawicki et al also concluded that adrenal gland trauma is rare, occurring in approximately one in 600-700 patients, and is usually a co-

incidental finding diagnosed on a radiological examination or during surgical exploration [3].

Majority (78.5%) of the adrenal injuries occur on the right side [2]. There are two postulated mechanisms of injury to account for the increased incidence of right sided injury. It is unlikely that the adrenal gland will be compressed directly by blunt trauma. However, increased pressure within the IVC may increase the right intra-adrenal venous pressure. This is more likely to cause injury to the right adrenal gland as the right adrenal vein communicates directly with the IVC. Alternatively, the adrenal gland already may have pre-existing pathology, such as an adenoma or cyst which makes the adrenal more susceptible to trauma.

Most adrenal gland injuries are able to be managed conservatively. However, should the patient become haemodynamically unstable then surgical or radiological intervention may be required [3]. Intervention may also be required should the patient develop severe hypertension. This may result from increased catecholamines due to the relative ischemia of the adrenal gland brought on by peri-adrenal haemorrhage [4].

In the rare situation of previous contra-lateral adrenal resection and trauma to the sole remaining adrenal gland; symptoms of severe adrenocortical insufficiency may predominate. These symptoms include fever, haemodynamic instability, refractory hypotension, high serum potassium and low serum sodium.

Adrenal trauma is a rare phenomenon. It is usually associated with a poor prognosis due to concomitant injuries. Adrenal cysts and adenomas make the adrenal gland more susceptible to trauma. This case report supports the literature that an isolated adrenal injury can be managed conservatively with analgesia and observation.

References

1. Davis JJ, Cohn I Jnr, Nance FC, Diagnosis and management of blunt abdominal trauma, *Ann Surg* 1976;83:672-8.
2. Mehrazin R, Derweesh IH, Kincade MC, Thomas AC, Gold R, Wake RW. Adrenal trauma: Elvis presley memorial trauma centre experience. *Urology* 2007;70:851-5.
3. Stawicki SP, Hoey BA, Grossman MD, Anderson HL 3rd, Reed JF 3rd. Adrenal gland trauma is associated with high injury severity and mortality. *Curr Surg* 2003;60:431-6.
4. Schmidt J, Mohr VD, Metzger P, Zirngibl H. Posttraumatic hypertension secondary to adrenal hemorrhage mimicking pheochromocytoma: case report. *J Trauma* 1999;46:973-5.

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