Adrenal Pseudoaneurysm Due to Blunt Trauma

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Abstract Blunt trauma to adrenal glands causing pseudoaneurysm is relatively uncommon. We report a case of an adrenal pseudoaneurysm in a young man who had a blunt abdominal trauma. The pseudoaneurysm was embolized. Pseudoaneurysm formation is a significant, albeit rare complication and can lead to adrenal hemorrhage. Currently, best treatment option is embolization. There is little known about natural course of a pseudoaneurysm, and there are no controlled trials in regard to follow up computed tomography (CT) scans in blunt solid organ injury.

Keywords Adrenal pseudoaneurysm · Adrenal hematoma · Embolization

Introduction

Blunt trauma to adrenal glands is being diagnosed more often with the advent of increased use of CT in trauma. The modern management of blunt adrenal trauma, as with other parenchymal injuries to abdominal solid organs, is often nonoperative.

Case Report

A 27-year-old man was skateboarding downhill at high speed and hit a 1 m high post. Impact was on the right side of his abdomen. His vital signs were stable and his Glasgow

coma score was 15. Secondary survey found facial, scalp lacerations and a tender abdomen in the right upper quadrant.

The CT abdomen demonstrated a laceration of the right lobe of the liver with evidence of pseudoaneurysm formation (Fig. 1) and a laceration of the superior pole of the right kidney, extending from capsular surface to the renal hilum, with a contrast leak suggestive of rupture of the right collecting system. There was enlargement of the right adrenal gland suggestive of hematoma (Fig. 2).

The patient had a cystoscopy and insertion of a JJ stent in his right ureter. The liver injury was treated conservatively.

After 1 week, he had an arterial phase CT abdomen to follow up on the liver pseudoaneurysm. The pseudoaneurysm in the hepatic arterial system was not seen. However, an 8 mm lesion contained within the right adrenal hematoma representing a pseudoaneurysm was discovered (Fig. 3).

This new finding prompted superselective angiography of the right phrenic artery (Fig. 4).

A branch of the right superior suprarenal artery was found to have an 8 mm pseudoaneurysm. The branch of the right superior suprarenal artery was embolized with 2 mm coils (Fig. 5).

Discussion

In recent years, more frequent use of CT imaging has shown that adrenal injury is a relatively common consequence of major blunt abdominal trauma with up to 25 % of patients sustaining adrenal trauma [1, 2]. It seems that the right gland is more vulnerable than the left. It is proposed that the mechanism of injury is compression of the gland between the liver and the spine [1, 2]. Adrenal hematoma in trauma is

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Fig. 1 CT abdomen showing liver laceration with a possible pseudoaneurysm

usually treated conservatively, occasionally surgically, and rarely by embolization of the hemorrhaging vessel [3].

The apparent frequency of adrenal bleeding may be due to its complex arterial supply [4]. The superior suprarenal artery is a branch of an inferior phrenic, middle suprarenal artery arises from aorta, while the inferior suprarenal artery arises from the renal artery. Embolization of one of these vessels is unlikely to cause ipsilateral adrenal infarction, and even if that was to occur, one functioning adrenal gland is usually adequate to prevent adrenal insufficiency [5].

Pseudoaneurysm is defined as a pulsating, encapsulated hematoma in communication with the lumen of a ruptured vessel and is most commonly caused by penetrating injury.

Fig. 2 CT abdomen showing right adrenal hematoma

Fig. 3 CT abdomen at 1-week post-admission showing focal enhancement of right adrenal gland

Fig. 4 Selective catheterization of right inferior phrenic artery, demonstrating pseudoaneurysm at a branch of the superior suprarenal artery

Fig. 5 Right suprarenal artery postembolization with multiple 2 mm coils

We have found only one other case of a traumatic adrenal pseudoaneurysm in the literature, reported by Ikeda et al. [6]. In that case, the patient became hypotensive 8 h post-injury. CT angiogram after injury revealed a blush within his adrenal hematoma. The patient underwent successful embolization of his inferior adrenal artery [6].

There is paucity of information on the natural course of a post-traumatic pseudoaneurysm. The available evidence recommends either embolization or surgery as the treatment for pseudoaneurysm due to its high risk of rupture.

Conclusion

Adrenal gland injuries leading to pseudoaneurysm are uncommon. Pseudoaneurysm formation is a significant, albeit rare complication and can lead to adrenal hemorrhage secondary to trauma. Currently, best treatment option is embolization. The question remains, should all patients with

adrenal hematoma have a follow-up CT abdomen to exclude pseudoaneurysm, and at what stage should it be done?

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