CASE REPORT

A martial arts injury: karate induced unilateral haematoma of the adrenal gland

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Adrenal gland haematoma is often a complication of traumatic events. The case is reported of a 45 year old man with unilateral non-symptomatic adrenal gland haematoma caused by a trauma during martial arts practice.

Adrenal gland haematoma is often a complication of surgical procedures, anticoagulant therapy, or traumatic events.¹ Its clinical presentation is typically characterised by acute abdominal pain, fever, low blood pressure, and progressive anaemia,² whereas non-symptomatic adrenal gland haematomas are extremely unusual and the lesion is often a large and palpable mass.

We report the case of a patient with unilateral, non-symptomatic, adrenal gland haematoma caused by a trauma during sports practice.

CASE REPORT

We evaluated a 45 year old patient who was referred to our ward after several emetic episodes and diarrhoea occurring after a trip to Tunisia. His medical history did not include any relevant pathologies that could explain the origin of the symptoms. However, he did mention his interest in martial arts (particularly karate), and reported that he had been recently hit in the "area" of the right kidney by a kick from his opponent delivered with the instep; immediately afterwards, he had felt a sharp pain and stopped breathing for a while.

A clinical examination at our hospital revealed only an aspecific and not relevant mild hypertrophy of the liver. The patient's blood pressure was 120/85 mm Hg, and laboratory tests showed a moderate increase in γ glutamate transferase activity. The results of routine blood tests were normal, and those of additional serological tests for *Amoeba*, *Echinococcus*, and *Schistosoma* spp were negative.

The patient subsequently underwent upper abdominal sonography, which revealed the presence of a round 14.8 $\times$ 12.5 cm formation with clear margins, liquid content, and hyperechoic areas, the location of which could not be precisely identified (the operator referred to it as of probably hepatic origin).

Subsequent computed tomography with contrast enhancement allowed us to identify the topography of the lesion, which encompassed the right adrenal gland, measured 13 $\times$ 13 $\times$ 13.5 cm (compatible with our hypothesis of a large pseudocystic mass), and exerted pressure on the right hepatic lobe; there was a mark on the superior pole of the right kidney, and the inferior vena cava was anteriorly displaced. On the computed tomography scan, it appeared hypodense with clear margins, with well defined, small areas of relative hyperdensity inside (fig 1).

After extensive discussion and suspecting a pseudocyst or cavernous haemangioma, we decided on surgical intervention

under general anaesthesia. Laparotomy revealed a very large retroperitoneal cystic mass which was intimately connected to the right adrenal gland, displaced the bottom part of the homolateral kidney and the top part of the right hepatic lobe, and was closely connected to the inferior vena cava. The cyst, which contained a substantial amount of haematic material, was partially emptied and then completely removed.

Histological evaluation of the surgical specimen led to a definite diagnosis of a partially organised adrenal gland haematoma, and excluded adenoma, carcinoma, haemangioma, or pheochromocytoma. Follow up was uneventful, and the patient was discharged after 10 days.

Three years later, the patient is well, with no sign of a recurrent mass or haemorrhage in the surgically treated area.

DISCUSSION

Martial arts injuries by body region reflect the specific techniques and rules of the martial art involved: the upper limbs tend to be injured more often in judo, the head and face in karate, and the lower limbs in tae kwon do. The activities engaged in at the time of injury include kicking or being thrown in judo, punching in karate, and performing a roundhouse kick in tae kwon do. The type of injury also tends to be martial art specific, with sprains reported in judo and tae kwon do and epistaxis in karate. The risk factors for martial arts injuries include age, body weight, and exposure.³

Most adrenal gland haematomas, which are more common in children than adults, are associated with anticoagulant therapy, septicaemia, low blood pressure, tumours, pregnancy complications, or traumas.¹ They have been classified by Vella *et al*⁴ into seven categories: incidentalomas (non-symptomatic idiopathic haematoma); spontaneous haematomas; anticoagulant therapy associated haematomas;

Figure 1 Computed tomography scan: adrenal haematoma (arrow) with clear margins and relatively hyperdense internally.

post-surgical haematoma; adrenal haematomas associated with heparin associated thrombocytopenia; severe stress or sepsis associated haematomas; haematomas due to traumas.

Traumatic adrenal haematomas often have a particular clinical presentation: they are temporally related to a specific traumatic event—for example, a car accident—and, particularly in the case of bilateral haematomas, their clinical picture is one of acute abdominal pain, fever, hypotension, and sudden asthenia. Non-symptomatic adrenal gland haematomas are sporadic and usually follow sports activity.^{1 2 5 6}

In our case, the anamnestic data were pivotal and allowed us to formulate a reasonable diagnosis of trauma related adrenal gland haematoma. Its presentation was certainly atypical, probably because the initial lesion was minimal and the pseudocyst grew very slowly (it had a pseudocapsule and even initial vascularisation). The findings of the first sonographic examination were insufficient to localise the lesion, but a subsequent computed tomography scan identified the adrenal gland as the originating organ.

In conclusion, it is not easy to diagnose an adrenal gland haematoma when its clinical presentation is mild and the anamnesis incomplete. Nevertheless, in patients who practise martial arts, visceral haematoma should be considered in the presence of a palpable and/or sonographically visible mass.

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COMMENTARY

This case report succinctly describes a case of adrenal haemorrhage that was probably caused by a martial arts injury. The anatomy of the adrenal gland makes it susceptible to venous infarction, and given this, as well as its location, it is likely that subclinical low grade haemorrhage is more common than what actually comes to clinical attention. There is one lesson to be drawn from this case, however: a large, contained haemorrhage such as the one described is unusual and in these circumstances an adrenal carcinoma could have presented in this fashion. If this were the case, care would need to be exercised by the surgeon to avoid opening the capsule and potentially seeding the peritoneum with adrenal carcinoma cells. One final note of caution, although there was a history of trauma which probably explains this presentation, it is important to ensure that there are no other potential causes of adrenal haemorrhage such as the antiphospholipid antibody syndrome.

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