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Trauma and reconstruction

Post-traumatic adrenal hematoma: A case report and revue of literature

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ABSTRACT

Post-traumatic adrenal hematoma, which has rare but severe complications, is a difficult to diagnose condition. Only computed tomography, which is often performed systematically during lesional assessments of violent thoraco-abdominal trauma, can confirm the diagnosis. Symptoms are often masked by associated visceral or parietal lesions. Standard biological examinations are generally not very helpful. We will describe the case of a 47-year-old man who presented with a right adrenal hemorrhage following a road accident, for only associated lesion, a fracture of the middle arch of the first and 8th ribs, and the transverse process L1.

Introduction

Post-traumatic adrenal hemorrhage is a relatively rare condition, affecting between 0.03 and 2% of cases of abdominal trauma.[1] Frequently linked to severe shock and associated with other injuries. Its semiology has nothing specific; the diagnosis seems to be linked to the systematic use of computed tomography during the lesion assessment in the context of thoraco-abdominal trauma. The severity of this pathology is quite variable and depends on the size of the hematoma as well as the unilateral or bilateral nature of the lesion. We report a case of post-traumatic adrenal hematoma.

Clinical case

A 47-year-old patient, with no particular history, brought to the emergency room following a road accident, with a point of thoraco-abdominal impact. The initial clinical examination showed a stable hemodynamic state (blood pressure at 145/80 mmHg, pulse: 77 p.m.), auscultation had revealed a syndrome of fluid effusion at the right pulmonary base, pain on palpation of the right chest anterior wall, no skin opening, right hypochondrium defense. The rest of the exam was normal. Analgesic treatment was started, combining IV paracetamol (Perfalgan® 1 g), IV ketoprofen (Profenid® 100 mg). Standard x-rays did not show any bone fracture in the limbs. A thoraco-abdomino-pelvic tomodensitometry objectified a hemopneumothorax of average abundance on the right side, a fracture of the middle arch of the 1st, and the 8th side, and the transverse process L1, a pneumoperitoneum, and a hematoma of the right suprarenal of 44 × 40 mm, without others associated lesions (Fig. 1, Fig. 2). Biologically, complete blood count, blood ionogram, kidney function and coagulation were unremarkable. Urinary dipstick was negative.

In front of the medium abundance pneumoperitoneum and the violent shock of the accident, a surgical exploration was indicated to eliminate a perforation of a hollow organ, which objectified the integrity of the digestive tract, the pneumoperitoneum is of origin thoracic fusion. Regarding the adrenal hematoma, our conduct was conservative treatment. The patient had benefited from right chest drainage, with good progress during the follow-up imaging. He stayed in the hospital for 8 days, and then returned home. The clinical and radiological control at 6 months had shown the disappearance of the hemopneumothorax and the pneumoperitoneum, and a regression of the adrenal hematoma.

Discussion

There are few observations in the literature of post-traumatic adrenal hemorrhage. Two traumatic mechanisms may be involved: direct trauma to the adrenal region as part of a violent abdominal impact causing compression of the adrenal gland on the spine; or an indirect mechanism linked to a deceleration phenomenon, causing tearing of vessels at the level of the adrenal capsule. It seems that the violence of the shock is not always the determining factor, different factors can favor the appearance of adrenal hemorrhages: stress, hemostasis disorders, whether primary or iatrogenic, and finally pre-existing lesions of the adrenal gland.[1] Damage to the right adrenal gland seems to be the most common. This has been demonstrated in a study carried out on 1120 patients suffering from abdominal trauma by D. W. Burks and S. E.

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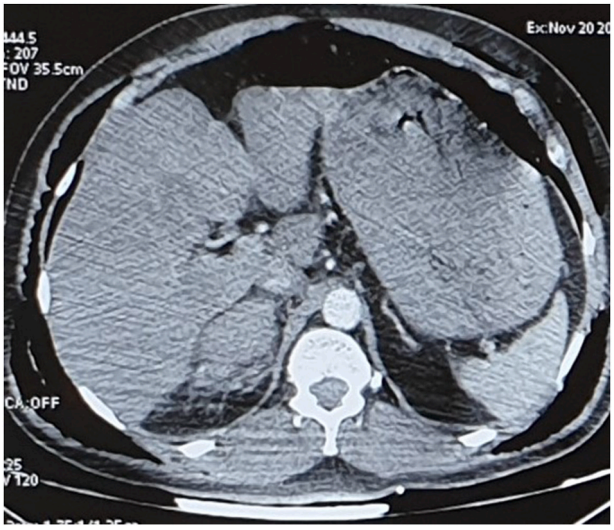

Fig. 1. Right adrenal hematoma.

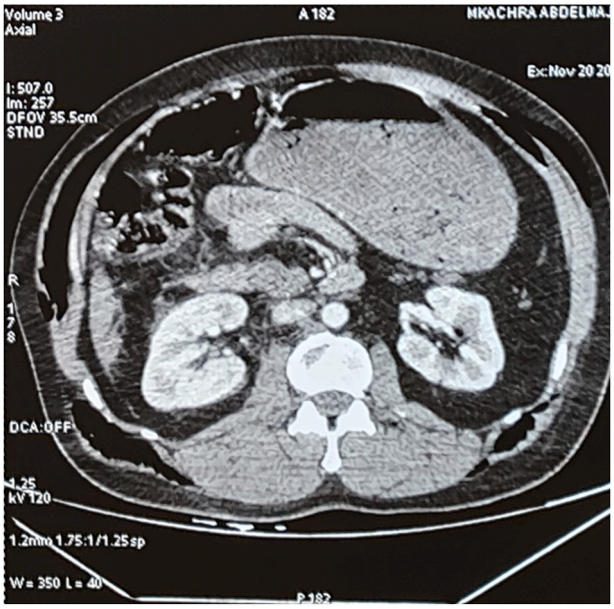

Fig. 2. Intact right kidney.

Mirvis.[1] This frequency of damage to the right could be explained in part by an anatomical peculiarity linked to the vascularization of the right adrenal gland: in fact, the right adrenal vein is short; it emerges at the level of the infero-medial part of the gland and joins the inferior vena cava. As a result, the post-traumatic hyperpressure phenomena generated in the inferior vena cava are transmitted more intensely in the right adrenal than in the left adrenal. Based on the history, the most likely traumatic mechanism seems to be related to a compression phenomenon. The diagnosis of adrenal hematoma is made difficult by the non-specific nature of the clinical and laboratory symptoms. In the case of multiple trauma patients, the clinical symptoms are very often masked by the associated trauma to other organs. These elements explain that before the advent of imaging, adrenal hematomas were often unrecognized and frequently diagnosed at autopsy or in patients living at the pseudocyst stage, which represents the usual course of hemorrhages of the adrenal gland.[2] In recent years, the diagnosis of post-traumatic adrenal hemorrhage has been made more frequently due to more systematic use of CT examinations during the lesion assessment in thoraco-abdominal trauma patients. The most common computed tomography appearance is that of diffuse oval hypertrophy of the adrenal gland, with a rosy opacity appearance, central hyperdensity and peripheral hypodensity. After injection of contrast product, there is no increase in density. The sensitivity, specificity and finesse of computed tomography make it a reference examination when looking for post-traumatic abdominal lesions and in defining their extent. Computed tomography has proven to be the test of choice to visualize this type of lesion.[3] MRI is a very reliable test for diagnosing adrenal hematomas as well as determining their stage of development, but it poses the problem of its availability.

Post-traumatic adrenal lesions are rarely found in isolation. In Burks' study,[1] associated lesions (rib fracture, hemothorax, atelectasis, pneumothorax, splanchnic lesions, renal lesions liver lesions, and lesions of the spine) are present in 19 out of cases. Our patient had rib fractures, and associated hemopneumothorax.

The majority of post-traumatic adrenal hematomas have a favorable outcome. The presence of clinical and biological abnormality should raise suspicion of the occurrence of a local complication (visceral compression, thrombosis of the inferior vena cava, infection), hemorrhagic or endocrine. The most serious, acute adrenal insufficiency, occurs more readily with bilateral hemorrhages and should be considered in the presence of a state of hypovolemic septic shock refractory to usual therapy.[1,4] Conservative treatment (strict bed rest and analgesic treatment) should be favored to preserve the adrenal gland as much as possible and to avoid possible surgical complications which may threaten the adrenal function in the long term. Surgery is only justified in case of diagnostic doubt or complications threatening the functional prognosis or vital. Adrenal haemorrhagic lesions are good indications for embolization because their surgical haemostasis is delicate and decaying, especially since there are sometimes serious associated lesions which increase the operative risk.[5]

Conclusion

Post-traumatic adrenal hematoma is an uncommon condition. It is usually associated with other thoraco-abdominal injuries in patients with severe trauma. Computed tomography is the gold standard for confirming the diagnosis. Surgical abstention should be the therapeutic attitude to focus on the adrenal plan in the absence of a threat vital prognosis.

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