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Adrenal Pseudocyst: Rare Clinical Presentation and Review of the Literature

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ABSTRACT

Adrenal pseudocysts are rare, non-neoplastic lesions of the adrenal gland, often discovered incidentally during imaging for unrelated reasons. Representing 32–80% of adrenal cysts, they are characterized histologically by a fibrous wall lacking epithelial or endothelial lining. Their etiology is uncertain but frequently linked to intra-adrenal hemorrhage, trauma, or degenerative changes. Most pseudocysts are asymptomatic, but large lesions may cause compressive symptoms or complications such as hemorrhage or rupture. This article presents the case of a 36-year-old woman with right hypochondrium pain due to a large adrenal pseudocyst, successfully managed by adrenalectomy. A literature review is also provided, covering epidemiology, pathogenesis, clinical presentation, diagnosis, and management. Imaging, especially CT and MRI, plays a crucial role in diagnosis and in distinguishing pseudocysts from malignant lesions. Surgical removal is indicated for symptomatic, large, or suspicious lesions, with minimally invasive approaches preferred when feasible. Early and accurate diagnosis is essential for optimal management and favorable outcomes.

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KEYWORDS:

Adrenal pseudocyst, adrenal cyst, adrenalectomy, incidentaloma, imaging.

INTRODUCTION

Adrenal pseudocysts are rare lesions of the adrenal glands, often discovered incidentally during imaging examinations performed for other indications.These cysts, which account for approximately 32-80% of adrenal cysts, are characterized by a fibrous wall without epithelial or endothelial lining. Their etiology remains uncertain, but they are frequently associated with intra-adrenal hemorrhagic episodes, trauma or degenerative processes [1,2]. Although generally asymptomatic, these pseudocysts can cause symptoms related to their size or compression of adjacent organs.This article offers a clinical and pathological review of adrenal pseudocysts, based on a recent case and data from the literature.

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CASE REPORT

A 36-year-old woman with a history of rheumatic valvular disease, diagnosed at the age of 7 and previously treated with extencillin injections (discontinued 11 years ago on medical advice), presented with a seven-month history of right hypochondrial pain radiating to the interscapular region. This persistent pain prompted her to consult a general practitioner, who performed an abdominal ultrasound. The imaging revealed a cystic mass measuring 10 x 8.4 cm located between the liver and the kidney. Further evaluation with abdominal computed tomography (CT) confirmed a well-defined, rounded, thin-walled cystic lesion in the inter-hepato-renal space,

spontaneously hypodense (15 HU), measuring 9.4 x 9.3 x 9.4 cm, and most likely of adrenal origin.

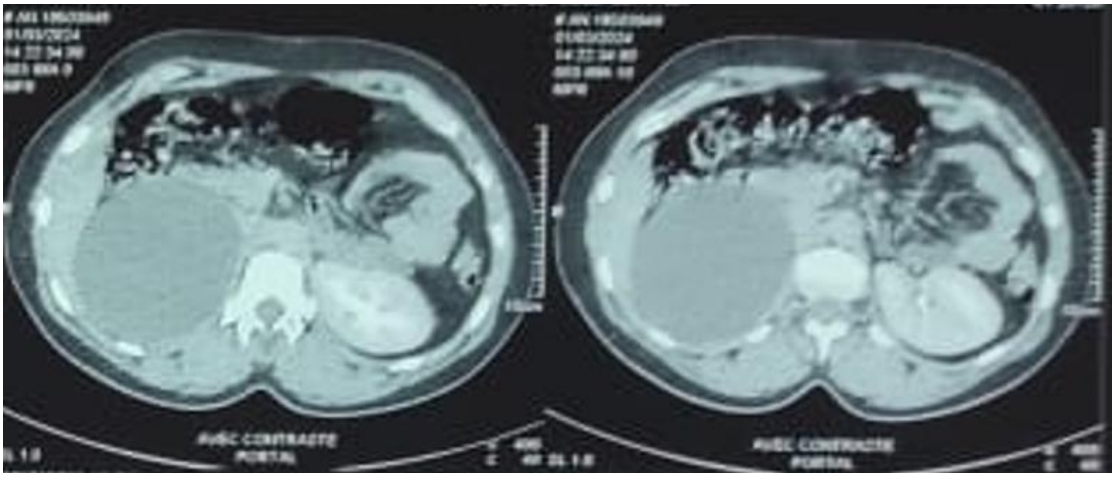

Figure 1: inter-hepato-renal cystic formation in CT

Additional findings on the CT scan included confluent osteolytic lesions in the right iliac wing without marginal sclerosis, classified as Lodwick type IB, suggesting an aneurysmal bone cyst, as well as a hemangioma in the L1 vertebral body. Clinically, the patient exhibited no signs suggestive of the Menard triad, nor did she experience flushing, renal colic, weight gain, recent weight loss, hypoglycemic or hypotensive episodes. Her general condition was preserved and she was afebrile.

Laboratory investigations showed a white blood cell count of 8,010/µl, hemoglobin at 14.3 g/dl, platelets at 293,000/µl, and a mildly elevated C-reactive protein at 14 mg/l. The urine culture revealed leukocyturia at 26,000/mm³ with mixed flora. Renal and hepatic functions were within normal limits, with serum creatinine at 6.58 mg/l and transaminases not significantly elevated. Adrenal function tests showed a cortisol level of 9 µg/dl, normetanephrine and metanephrine levels within reference ranges, and a negative hydatid serology. The patient's 24-hour urine output was 1,650 ml.

Given the size of the adrenal lesion and the uncertainty regarding its nature, the patient underwent a right adrenalectomy. The postoperative course was uneventful, without complications. Histopathological examination of the surgical specimen confirmed the diagnosis of an adrenal pseudocyst, with no evidence of malignancy.

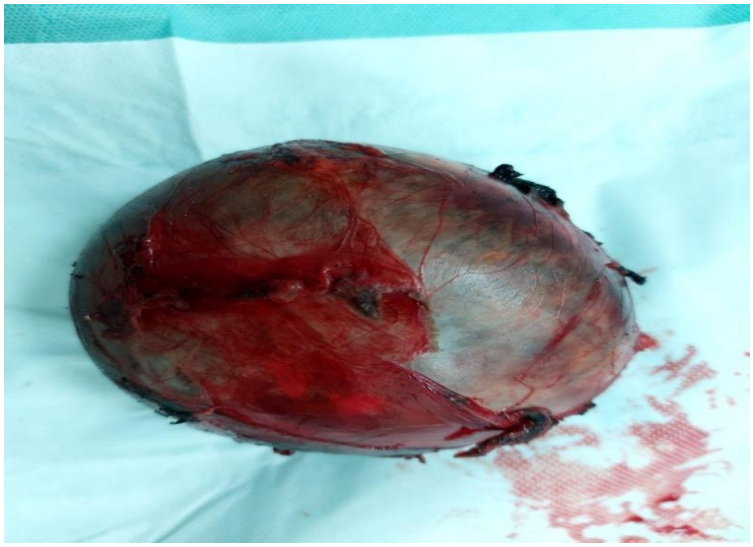

Figure 2: surgical specimen

DISCUSSION

Adrenal pseudocysts are rare, with an estimated incidence of between 0.064% and 0.18% in autopsy series [3]. Although their true incidence is probably higher due to the increased use of imaging techniques, they remain unusual lesions. They are more common in women, with a female:male ratio of 3:1, and their peak incidence is between the third and sixth decades [4]. The etiology of adrenal pseudocysts is still debated, although they are often associated with intra-adrenal hemorrhage, trauma or degenerative processes. Some cases may result from the degeneration of a pre-existing adrenal neoplasm, such as an adenoma or pheochromocytoma [5].

Intra-adrenal haemorrhage is considered a major precipitating factor. It can be caused by trauma, coagulopathy, complicated pregnancy or severe infection. This hemorrhage results in a fluid cavity surrounded by a fibrous wall, forming the pseudocyst [6]. Another hypothesis suggests that these pseudocysts may be true cysts that have lost their cell lining as a result of inflammation or intracystic bleeding [7].

The majority of adrenal pseudocysts are asymptomatic and discovered incidentally during imaging examinations carried out for other reasons [8]. However, large pseudocysts may cause compressive symptoms such as abdominal pain, nausea, abdominal distension or a palpable mass. In some cases, acute complications such as intracystic haemorrhage or rupture can cause acute abdomen or shock [9]. Symptoms associated with adrenal hyperfunction, such as those seen in Cushing's syndrome or pheochromocytoma, are rare but possible when the pseudocyst coexists with a functional neoplasm.

Diagnosis is based primarily on imaging. Computed tomography (CT) is the first-line examination and usually reveals a well-demarcated, hypoattenuated cystic mass, often with calcifications or haemorrhagic components [10]. MRI is particularly useful for characterizing intracystic components and differentiating pseudocysts from malignant lesions [11]. Pseudocysts often appear hyperintense on T2-weighted images and hypo- to iso-intense on T1, although the presence of blood or protein may alter these features [12].

Distinguishing between a benign pseudocyst and a malignant lesion remains a challenge. Pseudocysts can mimic malignant tumors such as adrenocortical carcinoma or metastases. Percutaneous biopsies or aspirations are rarely performed due to the risk of tumor dissemination in cases of suspected malignancy [13].

Treatment depends on the size, symptoms and malignant potential of the lesion. Asymptomatic pseudocysts of small size (<5 cm) can be monitored by regular imaging examinations. Surgical indications include compressive symptoms, suspected malignancy, rapid growth or acute complications such as haemorrhage or rupture [14].

Laparoscopic adrenalectomy is preferred for benign pseudocysts of moderate size. However, an open approach is recommended for large masses (>10 cm) or when malignancy is suspected [15]. The aim is to remove the lesion en bloc without rupture, to minimize the risk of tumour dissemination [16]. In cases where malignancy is excluded, marsupialization or percutaneous aspiration may be considered to relieve symptoms.

CONCLUSION

Adrenal pseudocysts, although rare, should be considered in the differential diagnosis of adrenal masses. Their management is based on rigorous clinical and radiological evaluation. Surgery remains the treatment of choice for symptomatic or suspicious lesions, with generally favourable post-operative results. Advances in imaging techniques and minimally invasive surgical approaches have considerably improved the management of these lesions.

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