Right Adrenal Abscess – An Unusual Complication of Acute Appendicitis

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Abstract

Acute appendicitis represents one of the most frequent abdominal emergencies encountered in everyday surgical practice. Local infectious complications are not unusual and retroperitoneal abscesses after acute retrocaecal appendicitis have been previously described. The authors present the case of a 22-year old female patient, admitted for a right iliac fossa abscess, secondary to gangrenous appendicitis. A right adrenal mass 35/40mm was revealed during preoperative ultrasound evaluation, which evolved into an adrenal abscess that spontaneously drained 10 days after appendectomy and retrocecal drainage. Adrenal abscesses are exceptionally rare, with only a few cases being reported in the literature, but none of these after acute appendicitis.

Key words

Adrenal gland – acute appendicitis – adrenal abscess

Rezumat

Apendicita acută reprezintă cea mai frecventă urgenţă în chirurgia abdominală. Complicaţiile infecţioase locale sunt destul de frecvente şi au fost descrise abcese retroperitoneale secundare unei apendicite acute în poziţie retrocecală. Autorii prezintă cazul unei paciente de 22 de ani, internată pentru un abces de fosă iliacă dreaptă, secundar unei apendicite acute gangrenoase. Examenul ecografic a descoperit o formaţiune expansivă suprarenală dreaptă de 35/40mm, care a evoluat într-un abces suprarenalian cu drenaj spontan în a 10-a zi postoperator. Abcesul suprarenalian este excepţional de rar, existând foarte puţine cazuri publicate în literatură, dar nici unul nu este descris după un episod de apendicită acută.

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Introduction

Acute appendicitis represents the most frequent abdominal emergency in every surgical practice. While a majority of patients present typical abdominal findings, some have obscure symptoms and non-characteristic physical signs, that can lead to a delayed diagnosis and complications. Abscess formation following neglected acute appendicitis is a serious complication requiring drainage and antibiotic therapy. A typical location of an abscess is around the caecum, but it can occur anywhere in the peritoneal cavity and seldom in the retroperitoneal space. The latter location is due to contiguous contamination from inflamed, perforated retrocaecal appendices. The right adrenal gland is usually protected due to its anatomical position. A Medline search was not able to find any reference to an adrenal abscess secondary to acute appendicitis. The case presented in this paper is probably the first documented case with such a complication to be published.

Case report

A 22 year old, sexually active female patient presented in the emergency room for right lower abdominal quadrant pain associated with high fever (39.°C), nausea, vomiting and loss of appetite. She had had a similar episode one month prior to her emergency room visit, for which she required a gynecological evaluation. The above symptoms, associated with a right pelvic mass were suggestive for pelvic inflammatory disease and a two week course of broad-spectrum antibiotic was recommended. A follow-up visit documented some improvement, but an abnormal leukocyte count in the urine was hastily interpreted as a urinary tract infection and the patient was prescribed two additional weeks of antibiotics. Symptoms did not improve significantly and four days after completing the antibiotics, she developed high fever and increasing pain in the lower abdomen, as well as loss of appetite and vomiting.

The clinical examination in the emergency room was relevant for a long standing septic focus in the abdomen. The patient was obviously ill, distressed, pale, tachycardic (105 beats/min), hypotensive (105/60 mmHg) and pointing towards the right lower quadrant as the major site of discomfort. The abdominal examination was unremarkable except for the right lower abdomen, which was very painful, and with obvious guarding over the entire area. Tenderness extended to the level of the iliac bone bellow and psoas contraction enhanced the painful sensation. Peritoneal signs were positive in the right abdomen, but diffuse peritonitis could be ruled out. The patient reported normal bowel habits. Vaginal examination was unremarkable.

Emergency room tests revealed significant anaemia (Hb = 10g/dl, Ht = 30%) and abnormal leukocyte and platelets count (WBC – 16,500/mm^3, platelets – 585,000/mm^3). Urinalysis showed frequent leukocytes and microscopic haematuria. Emergency abdominal ultrasound scan (Sonoline Sienna, Siemens) showed an ill-defined heterogeneous collection in the right lower quadrant, 9.5 cm in diameter, extending to the right pericolic space and a small fluid collection in Douglas pouch. Additionally, a right adrenal mass was identified, which was heterogeneous and hyperechoic with hypoechoic foci, measuring 47 x 37 x 30 mm (Fig.1). The appendix could not be individualized, but free intraperitoneal fluid was present around the caecum and in the space of Morrison.

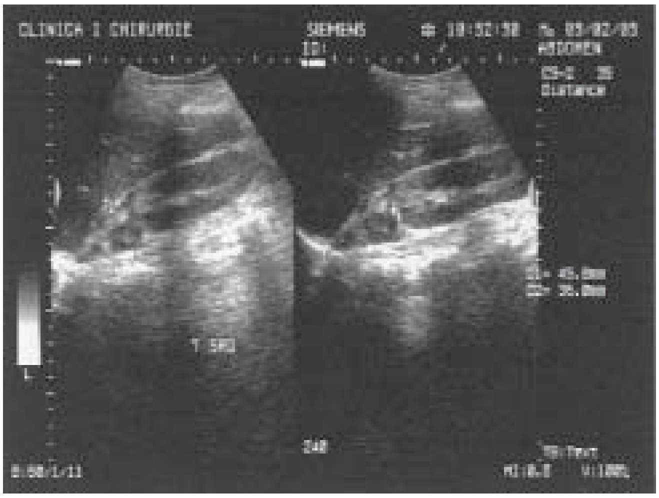

Fig.1 Ultrasonography - unilateral right adrenal mass, size 47/37/30 mm heterogeneous, hyperechoic with hypoechoic foci.

As an incidental finding, there was a 5 mm non-obstructive calculus in the right kidney. Stage diagnosis was acute appendicitis complicated with retrocaecal abscess and an incidental non-secretory right adrenal tumor.

Laparotomy was performed under general anesthesia. Abdominal exploration revealed a 12 cm long retrocaecal apendix with gangrenous inflammation and a large abscess extending behind the caecum in the retroperitoneal space up to the lower pole of the kidney. A large quantity of foul smelling pus was evacuated and microbiological studies demonstrated E. coli strains. Appendectomy could be accomplished after full mobilization of the caecum. The remaining cavity was washed with Betadine® and drained. Another sump-drain was placed in the Douglas pouch.

Early postoperative recovery was uneventful, with low-grade fever and limited serous discharge through the drainages, which was expected in the context of the retroperitoneal abscess. Towards the end of the first postoperatively week the patient became ill, with high fever and evidence of purulent discharge.

A contrast-enhanced CT (HiSpeed) performed 10 days postoperative confirmed the presence of an ill defined adrenal mass, with fluid foci and infiltration of the adjacent fat planes, extending into the upper part of the posterior right pararenal space (Figs.2,3). No residual collection was found in the right lower quadrant (Fig.4).The described mass enhanced after contrast medium injection only in the periphery, aspects considered consistent with abscess formation.

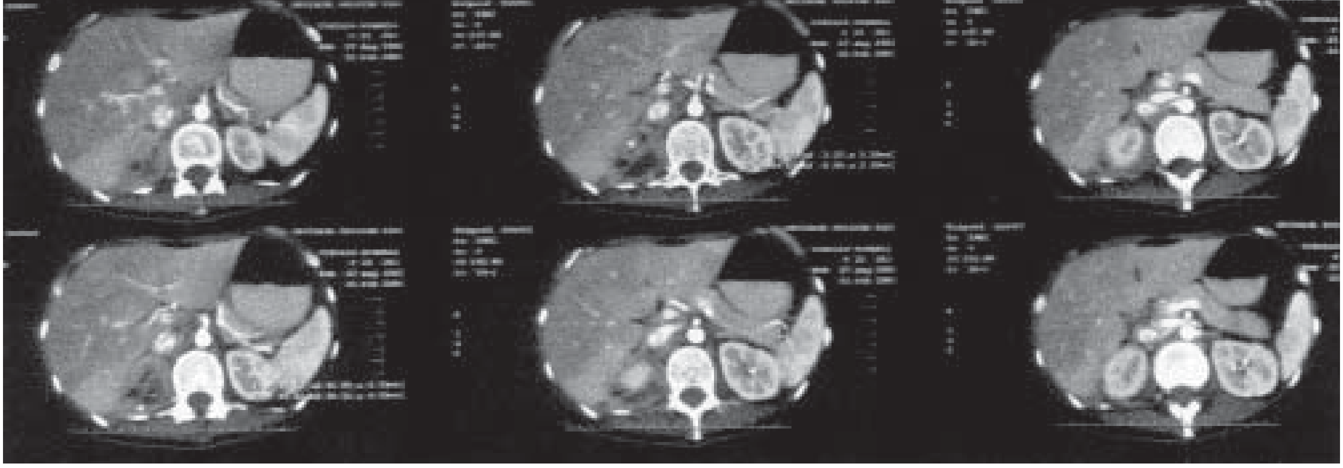

Fig.2 10-days postoperative: contrast-enhanced CT scan shows persistence of enlargement of the right adrenal gland, with a hypodense non-enhancing collection. Infiltration of the posterior pararenal space.

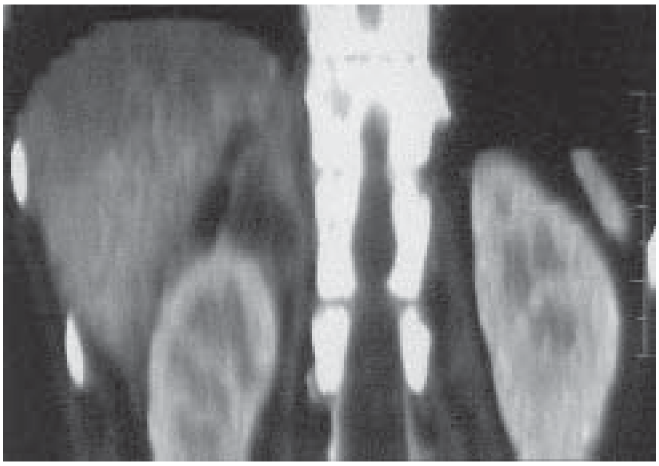

Fig.3 Contrast-enhanced CT: coronal reformatted image showing the right adrenal fluid collection.

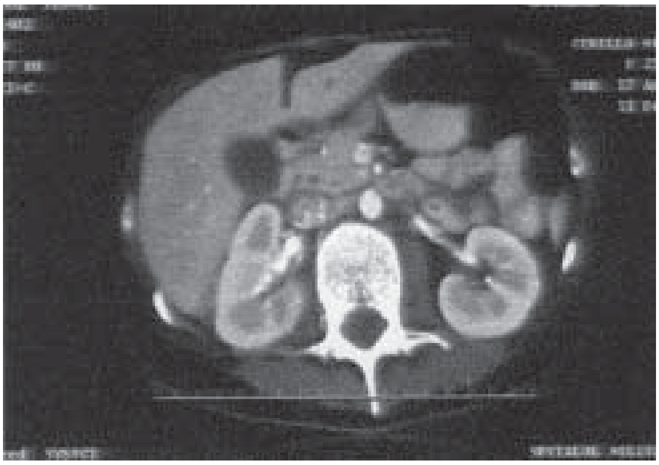

Fig.4 Contrast enhanced CT: no changes in the perirenal or pararenal space at a lower level.

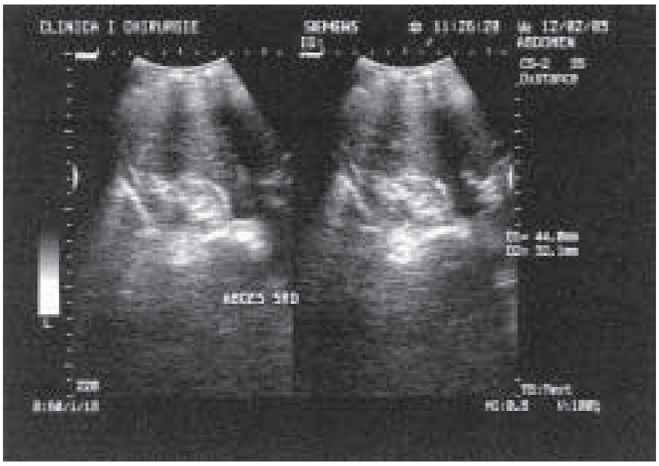

Fig.5 Follow-up ultrasound reveals anechoic areas in the right adrenal mass.

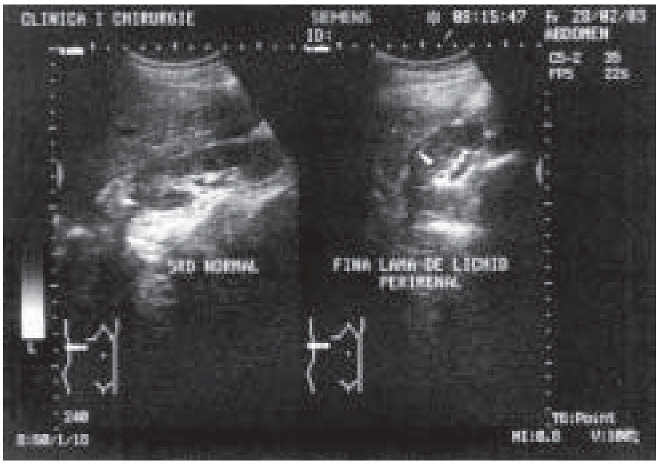

Fig.6 Follow up ultrasound scan showing normal right adrenal gland with a minute liquid collection arround the right kidney.

The apparent contradiction between the ultrasound and CT scan was clarified after a follow up ultrasound scan (Fig.5) which demonstrated a significant change in the character of the adrenal mass, with the development of anechoic areas. A fine-needle aspiration done under ultrasound guidance failed to provide enough material for cytology.

A conservative therapeutic decision was chosen with a change of antibiotic scheme according to in vitro sensibility (Unasyn®). The retrocaecal tube continued to drain a significant amount of pus with a sudden increase in the 11^{th} postoperative day. The drainage continued for another 3 days in large quantities and we made all the efforts to preserve the permeability of the drainage tube by washing them daily with antiseptic solutions. Persistent leukocytosis (17 000/mm^3) associated with a high platelets count (>880 000/mm^3) suggested an ongoing abdominal sepsis. Two weeks postoperatively, the drainage started to fade away and we noticed a significant improvement in the patient's clinical status. She was discharged in the 23^{rd} postoperative day with a minor wound infection and was seen as an outpatient for daily dressings. An ultrasound scan one month after the operation showed a normal right adrenal gland and a minute layer of liquid around the right kidney (Fig.6).

Discussion

Acute appendicitis is a major source for medical errors, as pain in the right lower quadrant is a non-specific symptom. The patient was obviously misdiagnosed on her initial presentation and was improperly managed. Broad spectrum antibiotics changed the clinical presentation and produced an atypical evolution of the disease. Unfortunately, acute appendicitis can be misinterpreted as both urinary tract infection and pelvic inflammatory disease, although the opposing situation is more typical. Retrocaecal position of the appendix prevents direct contact of the inflamed organ with parietal peritoneum and as such, all clinical signs and symptoms will be less obvious. Experienced clinicians are aware of this situation and do not exclude acute appendicitis based on the absence of abdominal guarding. Adrenal abscesses are rare in infants and exceptional in adults. A thorough search on Medline found few cases described worldwide, but none as a complication following acute appendicitis. Most cases are described in newborn and infants (1-10) and a variety of germs have been involved including Proteus (12), Bacteroides (6) and gas forming organisms (3). Cases have been described after conservative treatment of adrenal haemorrhage (2), but also following adrenal biopsy (13). In adults, the immunosupressed individuals may be more prone to such a complication (14) and a larger spectrum of germs could be demonstrated including Nocardia (15) and Escherichia Coli (16). A few cases have been reported with tuberculosis abscesses (17-19), but also a rare case with melioidosis (20).

The mechanism of infection is presumed to be systemic and bilateral involvement of the adrenal gland has been described (8,9). An exception is abscess formation in association with invasive diagnostic procedures. Direct contamination from acute appendicitis has not been described yet and is most probably very unusual due to the separation of anatomical spaces of the retroperitoneum. In our case, the infection of the right adrenal gland was facilitated by the retrocaecal position of the appendix and abscess formation in the adjacent retroperitoneal. Improper management made possible a direct contamination through the fascia of Gerota.

Diagnosis is suggested by an abnormal mass projected in the anatomical location of the adrenal gland, usually associated with a septic condition. Ultrasound scan, CT scan and MRI are all helpful in describing the lesion. Early images can be misleading as the abscess can mimic a renal or adrenal tumor (5,21), but imaging follow-up will demonstrate a rapid growth and liquefaction of the mass (15). Percutaneous aspiration may be useful in establishing an accurate diagnosis and is essential for a conservative approach (12).

Treatment options include aggressive surgical excision and drainage (22), but more often conservative methods: percutaneous drainage (8,12,23) or needle aspiration (24), combined with systemic antibiotic therapy. We chose a conservative approach, having the advantage of a permeable drain tube positioned in the retroperitoneal space, in close proximity to the inferior pole of the right kidney. Liquefaction of the abscess was followed by an abundant drainage, driven by gravity and following the track of the initial contamination. Soon after spontaneous drainage the patient improved and could be discharged. One month after the initial operation, the ultrasound structure of the adrenal gland returned to normal.

In conclusion, adrenal abscess represents an exceptionally rare but serious complication of acute appendicitis. Early diagnosis and prompt initiation of therapy can ensure a favorable outcome.

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