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Perinephric abscess as a rare cause of acute abdomen: A case report

Akut batının nadir bir nedeni olarak perinefrik apse: Olgu sunumu

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Abstract

Renal and perinephric abscesses are usually confined within the Gerota's fascia and treated with conservatively. We herein present a case with peritonitis caused by the spillage of perinephritic abscess into the abdomen through the Gerota's fascia, which is clinical outcome. A 41-year-old female patient was admitted to emergency room with complaints of abdominal pain, bloating, fever, and fatigue. During the operation, an abscess of approximately 20x15cm in size was observed to extend into the abdominal cavity through the Gerota's fascia, causing secondary peritonitis. On the 20th postoperative day, the patient was uneventfully discharged. Delay in diagnosis of renal and perinephric abscesses can lead to fatal complications. Laparotomy is a life-saving approach in cases that cannot be treated with percutaneous drainage, when the abscess is large and causes complications such as strictures, fistulas, or secondary peritonitis, by extension through the Gerota's fascia, as in our case.

Keywords: Perinephric abscess, Renal abscess, Secondary peritonitis, Acute abdomen

Öz

Renal ve perinefrik apseler genellikle Gerota fasyasında sınırlı kalırlar ve konservatif yöntemlerle tedavi edilirler. Bu çalışmada perinefritik apsenin nadir görülen klinik bir sonucu olarak Gerota fasyasından karın içerisine açılması sonucu sekonder peritonite sebep olduğu olguyu sunmayı amaçladık. 41 yaşında kadın hasta karın ağrısı, karında şişlik, ateş ve halsizlik şikayetleriyle hastanemiz acil servisine başvurdu. Acil opere edilen hastada Gerota fasyasından karın içine uzanan yaklaşık 20x15 cm çapında apse ve sekonder peritonit saptandı. Postoperatif 20. gün hasta şifa ile hastaneden taburcu edildi. Perinefritik apselerin tanısında gecikme olması öldürücü komplikasyonlara yol açabilir. Gerota fasyasını aşan, striktür, fistül veya bizim olgumuzda olduğu gibi sekonder peritonitin geliştiği ve perkütan drenajla tedavi edilemeyen geniş apselerde laparotomi hayat kurtarıcıdır.

Anahtar kelimeler: Perinefrik apse, Renal apse, Sekonder peritonit, Akut karın

Introduction

Renal and perinephric abscesses are two major clinical problems in hospitalized patients, with a prevalence of 1 to 10 per 10,000. The prevalence is approximately same in males and females [1]. When the renal abscess develops, the suppurative material encases the renal parenchyma and the capsule. The abscess is usually confined within the Gerota's fascia. The most common condition associated with abscess formation is the spreading of lower urinary tract infections to the kidney, which develop due to gram-negative bacteria [2,3]. These abscesses are treated with conservative methods, such as antibiotic treatment and percutaneous drainage, and can lead to flank, scrotal, or subphrenic abscesses and occasionally, colonic fistulae [4,5]. According to the literature, expansion of the perinephric abscess into the mediastinal and epidural space has also been reported [6]. Our case manifests a rare condition of secondary peritonitis caused by perinephric abscess extending through Gerota's fascia and spilling into the abdominal cavity.

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Case presentation

A 41-year-old female patient was admitted to the emergency room with complaints of abdominal pain, bloating, fever, and fatigue. The abdominal pain had lasted for a week and worsened in the last 2 days. The patient had Type 1 Diabetes and received insulin treatment. On physical examination, blood pressure was 110/60 mmHg, pulse rate was 96/min, and body temperature was 37.9^{o}C. There was severe distention, abdominal guarding and rebound in all quadrants of the abdomen, particularly in the left upper and lower quadrants. Leukocyte count (WBC) was 13.84 x 109/L, hemoglobin value was 10.73 g/dL (14-18 g/dL), hematocrit, 34.31, C-reactive protein (CRP), 20.7 (40-53%), blood glucose, 287, and serum albumin, 2.3 g/dL (3.5-5 g / dL). All other biochemical parameters were within normal limits. Respiratory and cardiac examination revealed no pathology. Emergency ultrasound examination (US) revealed an intense lesion measuring approximately 185 x 99 mm and a thick wall in the left renal pouch, indicating pyonephrosis and an abscess. Extensive free fluid was seen in the abdomen and edema was observed in abdominal submucosal fat planes. Upon these findings, an abdominal tomography (CT scan) was performed, which revealed a fluid collection measuring approximately 129x114 mm with air and septae, indicating an abscess and emphysematous pyelonephritis, surrounding the left kidney with borders undistinguishable from the left kidney. The lesion pushed the left kidney anteroinferiorly. It has been reported that contrast enhancement was observed on the peritoneal surfaces in the pelvic region, pointing to peritonitis, as evidenced by the distorted appearance of mesenteric tissue and omentum in the lower quadrant of the abdomen. Axial and coronal section plane abdominal CT findings are shown at Figure 1 and Figure 2.

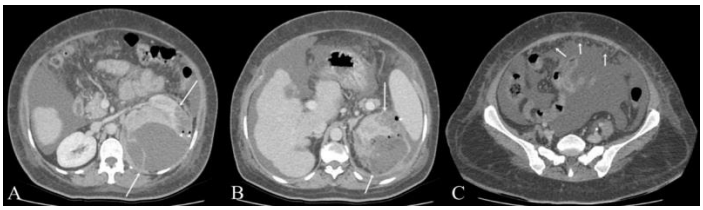

Figure 1: A: IV contrast abdominal computerized tomography showed dense fluid collection with septae displacing the left kidney anteriorly (long arrows), air images inside the fluid collection (short arrows) and intraabdominal free fluid in the axial plane B: dense fluid collection with septae including air images in the left kidney region (long arrow), intraabdominal free fluid and free air adjacent to the spleen (short arrow), C: Intraabdominal omental thickening – contamination (arrows) and widespread intraabdominal free fluid

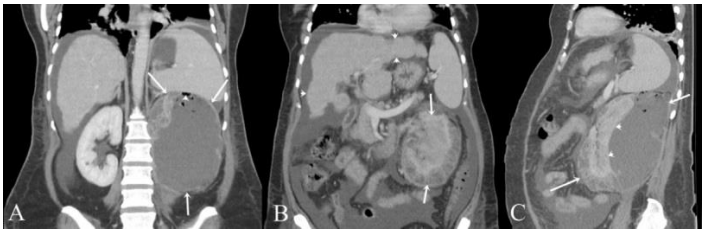

Figure 2: A: IV contrast abdominal computerized tomography showed a dense fluid collection around the left kidney, air images superior to the fluid collection (short arrows) and intraabdominal free fluid in the coronal plane, B: dense fluid collection with septae displacing the left kidney inferiorly (long arrows), lobulated liver contours (short arrows) and intraabdominal free fluid, C: dense fluid collection with septae displacing the left kidney anteriorly (long arrows), air images superior to the fluid collection (short arrows) and intraabdominal free fluid

With these findings, the patient was urgently operated on. During the operation, approximately 4 liters of infected fluid (ascites) was aspirated from the abdominal cavity. Exploration of the abdomen revealed an abscess measuring approximately 20x15 cm in size, extending into the abdominal cavity through Gerota's fascia. The omentum and small intestines were edematous and conglomerated in the lower quadrants. Purulent fluid was present in the pelvic, perihepatic, perisplenic areas and lower right quadrant regions of the stomach. The peritoneum was thickened and edematous in the left upper and lower quadrants, due to secondary peritonitis. The liver also appeared extremely fibrotic and cirrhotic. Gerota's fascia was dissected and patchy, necrotic areas were observed in the superior kidney parenchyma. The abscess pouch was opened, a culture was obtained and approximately 400 cc of purulent fluid was aspirated. The purulent fluid in the abdomen, approximately 600 cc, was aspirated and the abdominal cavity was irrigated with abundant saline. Due to edema in the intestines and peritonitis findings, the fascia could not be closed, and the operation was terminated after closure of the skin. The patient was monitored in the intensive care unit with the support of a ventilator. Blood, fresh frozen plasma, and albumin replacements were administered, and antibiotic therapy (meropenem) was started. On the first postoperative day, peritoneal lavage was performed due to purulent discharge from the surgical drains. Monitoring with the support of a ventilator was continued and blood, fresh frozen plasma and albumin replacements were administered periodically. Peritoneal lavage was performed, and fascia was closed on the 4th postoperative day. Monitoring was continued in the intensive care unit. The patient was extubated on the 6th postoperative day and she was discharged from the intensive care unit on the 9th postoperative day. On the 20th postoperative day, the patient was uneventfully discharged. Written and verbal informed consent forms were obtained from patient.

Discussion

Renal and perinephric abscesses are two major clinical problems that result from lower urinary tract infections ascending to the kidney. They often develop due to gram-negative bacteria, E. coli being the most common [2,7]. Early start of appropriate antibiotic therapy is important in treating urinary tract infections and preventing complications such as renal abscess [8]. Perinephric abscesses occur as a result of parenchymal damage due to severe pyelonephritis and elevation in the intrapelvic pressure, usually caused by stone-related obstruction. The most important predisposing factors are a combination of conditions that lead to immunosuppression, such as stone-induced obstruction accompanied by urinary tract infection, uncontrolled diabetes, and the use of intravenous drugs [9]. Our patient was receiving insulin treatment due to Type 1 diabetes, and liver cirrhosis was found during abdominal CT scan and following the operation.

Renal and perinephric abscesses usually manifest by varying degrees of discomfort and pain in the flank area, fever, fatigue, loss of appetite, nausea, weight loss and sometimes permanent hiccups [9]. Since the findings of lower urinary tract infections are common in patients admitted to the hospital, the diagnosis of pyelonephritis and perinephric abscesses are often delayed until the occurrence of major findings [10]. These abscesses, usually confined within the Gerota's fascia at the time of diagnosis, can occasionally spread beyond it and extend to the pararenal area. This can result in strictures and fistulas in the surrounding organs (bowel, pancreas, liver, spleen, pleural space, gall bladder, vertebra, prostate, etc.) due to the collection of purulent fluid [4-6,9]. Therefore, the most crucial factor in

treating renal and perinephric abscesses is early diagnosis [11]. In our case, the abscess caused a rare clinical finding of secondary peritonitis due to extension through the Gerota's fascia to the peritoneum.

It is particularly important to evaluate patients with renal and perinephric abscesses carefully in terms of clinical symptoms, findings of urosepsis, age, general condition and presence of comorbid diseases [10]. In laboratory findings, high CRP and BUN levels are correlated with poor prognosis [12]. With the use of modern imaging techniques, such as high-resolution ultrasound, computed tomography and MRI, renal and perinephric abscess-related mortality has declined from 40-50% to 1.5-15% in the last 30 years [13]. The first line modality for diagnosis of renal and perinephric abscesses is ultrasound, with a sensitivity ranging between 70 and 86%. Sensitivity of CT scan is higher, between 96 and 100%. Although sensitivity of an MRI is higher than that of a CT scan, it is not the preferred imaging method. However, it reduces the amount of radiation in cases where clinical follow-up is required [10]. In our patient, the ultrasound revealed a collection of fluid with intense content at the left renal pouch, leading to the pre-diagnosis of pyelonephrosis and an abscess. The CT scan showed an abscess and emphysematous pyelonephritis.

The empirical antibiotic therapy commonly used in the treatment of renal and perinephric abscesses involves fluoroquinolones. Also, aminopenicillins, group 2 and group 3a cephalosporin combinations, or aminoglycosides can be used [2]. It is reported that invasive procedures should be avoided in cases of small or medium-sized abscesses, which measure less than 5 cm in diameter, and in abscesses which regress within four weeks of antibiotic therapy [14]. Invasive treatment should be performed in patients with abscesses larger than 5 cm in diameter, unopened to abdominal cavity, uncomplicated, and not responding to antibiotic treatment. The first-line treatment method in these cases is percutaneous drainage. This process is curative in 60-93% of cases [11]. In the last decade, renal and perinephric abscesses have been treated with percutaneous drainage in 52-84% of cases and open surgical procedures have been performed in only 6% of patients [15]. Factors that can limit percutaneous drainage include multilocular abscesses and abscesses with a diameter larger than 5 cm. The success rate may be reduced due to the need for multiple drainage procedures in the multilocular abscesses. Success rate of percutaneous drainage in abscesses with a diameter ≤5 cm was reported as 92%, while those with a diameter of >5 cm was only 33%. Rate of open surgical procedure was reported as 37% in the latter group [16].

Conclusion

Delay in diagnosis of renal and perinephric abscesses can lead to fatal complications. Laparotomy is a life-saving approach in cases that cannot be treated with percutaneous drainage or when the abscess is large and causes complications such as strictures, fistulas, or secondary peritonitis caused by extension through the Gerota's fascia, as in our case.

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