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Case Report

Acute kidney injury secondary to bilateral tubo-ovarian abscess: a case report

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ABSTRACT

Tubo-ovarian abscess (TOA) is a severe sequela of pelvic inflammatory disease and is exceedingly rare in postmenopausal women. Acute kidney injury (AKI) is commonly encountered in hospitalized patients; however, AKI due to ureteral obstruction from TOA is exceptionally uncommon. We report a case of a 51-year-old postmenopausal woman with a 27-year retained intrauterine device (IUD) who presented with bilateral TOA and postrenal AKI caused by bilateral hydroureteronephrosis. Initial management included broad-spectrum antibiotics, bilateral nephrostomy, and antegrade double-J stenting. Due to ongoing sepsis and persistent fever, she underwent emergency laparotomy with bilateral abscess drainage and total abdominal hysterectomy with bilateral salpingo-oophorectomy. The patient's renal function returned to normal following surgical decompression. This case underscores the importance of considering TOA in the differential diagnosis of postrenal AKI, particularly in women with pelvic masses and signs of infection. Early imaging and multidisciplinary management are essential for favourable outcomes. Retained IUDs in postmenopausal women may contribute to chronic pelvic infections and abscess formation.

Keywords: Acute kidney injury, Hydroureteronephrosis, Intrauterine device, Postmenopause, Tubo-ovarian abscess

INTRODUCTION

Tubo-ovarian abscess (TOA) is a potentially life-threatening condition that most commonly arises as a complication of pelvic inflammatory disease (PID) in reproductive-aged women. However, it may also occur in postmenopausal women, especially in the context of prolonged intrauterine device (IUD) use, diabetes, or immunosuppression.[1,2]

TOA may present with nonspecific symptoms such as lower abdominal pain, fever, and vaginal discharge, making early diagnosis difficult.[3] Although TOA can have a varied clinical course, complications such as rupture, peritonitis, or sepsis are well described. However, TOA causing bilateral ureteral compression and leading to AKI remains exceedingly rare.[4-6]

We present a rare case of a postmenopausal woman with a long-standing IUD, who developed bilateral TOA complicated by bilateral hydroureteronephrosis and postrenal AKI. Her condition was successfully managed with antibiotics, urinary drainage, and definitive surgery. This report also emphasizes the importance of considering obstructive uropathy as a potential consequence of large pelvic abscesses.

CASE REPORT

A 51-year-old gravida 3, para 3 woman, postmenopausal for two years. Her past medical history was unremarkable, but she had used the same IUD for 27 years without removal. She presented to our hospital with complaints of abdominal pain, fever, and nausea. She had been previously evaluated at another center with similar

symptoms and was diagnosed with bilateral TOA on transvaginal ultrasound. Despite being advised hospitalization, she refused and was treated as an outpatient with oral doxycycline, oral metronidazole, and daily intramuscular ceftriaxone for 10 days.

Upon referral to our institution, physical examination revealed a soft and non-distended abdomen without rebound or guarding. Laboratory tests showed hemoglobin 9.2 g/dl, platelet count 675×10³/µl, white blood cell count 24.67×10⁹/l, serum creatinine 1.33 mg/dl, eGFR 46 mL/min/1.73 m^2, CRP 216 mg/l, and procalcitonin 0.69 ng/mL. CA-125 was 58 U/ml and CA 19-9 was 43 U/ml.

Contrast-enhanced abdominal MRI demonstrated grade 1-2 hydroureteronephrosis on the right and grade 2-3 on the left (Figure 1), with a right adnexal abscess measuring 91.5×77.9 mm and a left-sided abscess measuring 118.3×81.27 mm, both adherent to the rectosigmoid colon (Figure 2). The right-sided abscess showed invasion into the uterine fundus.

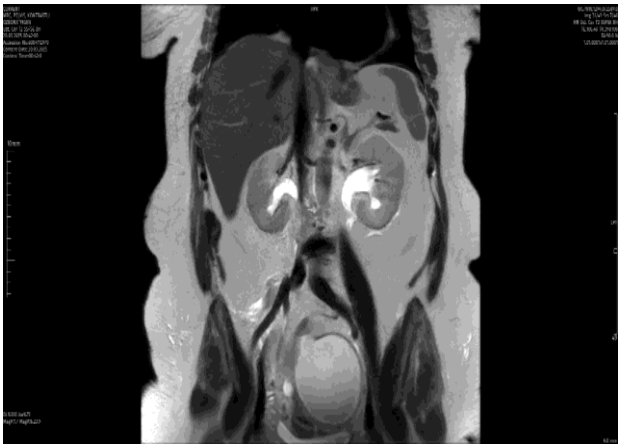

Figure 1: Contrast-enhanced abdominal MRI showing grade 1-2 hydroureteronephrosis on the right and grade 2-3 hydroureteronephrosis on the left.

Empirical intravenous piperacillin-tazobactam and oral doxycycline were initiated. On hospital day 3, oliguria developed, and serum creatinine rose to 1.67 mg/dl. Bilateral nephrostomy catheters and antegrade double-J stents were placed. Despite partial improvement in renal function (creatinine: 1.23 mg/dl), fever recurred, CRP rose to 263 mg/l, and procalcitonin increased to 2.3 ng/ml.

Due to ongoing signs of sepsis and lack of radiological regression of the abscesses, an emergency laparotomy was performed. The patient underwent bilateral abscess drainage, total abdominal hysterectomy, and bilateral salpingo-oophorectomy. Intraoperative cultures grew *Escherichia coli*. Antibiotic therapy was modified to intravenous imipenem and oral doxycycline.

By postoperative day 10, serum creatinine had decreased to 0.69 mg/dl and follow-up imaging revealed resolution of the hydronephrosis. The patient was discharged in good general condition and DJ stents were removed in the third postoperative week.

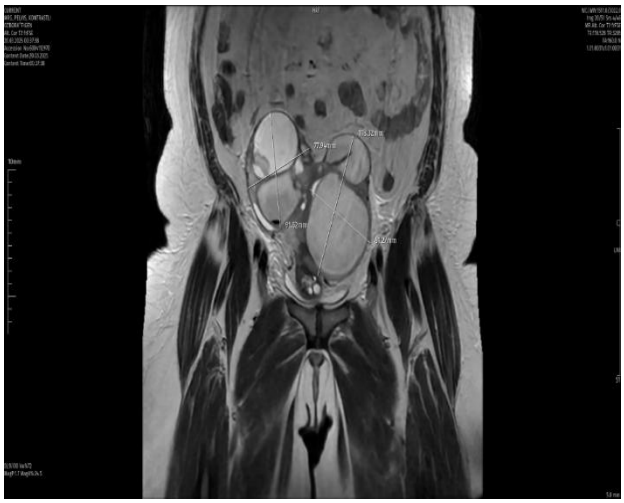

Figure 2: Axial MRI images demonstrating a right adnexal abscess measuring 91.5×77.9 mm and a left adnexal abscess measuring 118.3×81.27 mm, both adherent to the rectosigmoid colon. The right-sided abscess also shows invasion into the uterine fundus.

DISCUSSION

TOA is a serious gynecological infection characterized by a purulent collection involving the fallopian tubes and ovaries. It is most frequently encountered in women of reproductive age but can also occur in postmenopausal women, particularly those with risk factors such as long-term IUD use, diabetes, or immunosuppression.[1-3]

While TOA often presents with lower abdominal pain, fever, and leukocytosis, complications such as rupture, peritonitis, and sepsis are well documented.[4] However, postrenal AKI resulting from bilateral ureteral compression by a TOA is exceedingly rare. Postrenal AKI accounts for only 5-10% of all AKI cases and is usually caused by obstructive uropathy due to malignancy, stones, or fibrosis.[5,6] Inflammatory masses such as TOAs are a rarely reported etiology.

In our patient, large bilateral TOAs caused grade 2-3 hydroureteronephrosis with progressive renal impairment. The reversibility of the AKI following nephrostomy and stent placement confirmed the obstructive origin. Similar cases in the literature have shown that large pelvic abscesses may present initially as urinary tract infections or renal colic due to mass effect on the ureters.[4,7,8]

Christodoulidou and Thomas described a case in which TOA presented with flank pain and hydronephrosis and was initially misdiagnosed as pyelonephritis.[7] Yin et al reported a patient with bilateral TOA and obstructive AKI successfully treated with surgery.[4] Nakao et al presented a case in a renal transplant recipient, reinforcing that patients with compromised immunity may have more severe

presentations.[8] Additionally, in a systematic review, Curtis et al found an increased risk of pelvic infections with long-standing copper IUDs, particularly beyond 10 years of use.[9]

Management of TOA depends on the size of the abscess, the clinical condition of the patient, and response to antibiotics. For abscesses larger than 8 cm or when there is no response to medical therapy within 48-72 hours, drainage or surgery is recommended.[2,10] In our case, despite appropriate empiric antibiotic therapy, the patient's clinical status deteriorated, and definitive surgical management was required.

A multidisciplinary approach involving gynecology, urology, interventional radiology, and infectious disease specialists was critical in achieving a good outcome in this case. Early imaging, timely urinary decompression, and prompt surgical source control contributed to the patient's recovery and normalization of renal function. Such an approach is especially crucial in complex cases with overlapping urological and gynecological involvement.[6,10]

CONCLUSION

This case highlights the importance of considering TOA in the differential diagnosis of postrenal AKI, especially in women presenting with pelvic masses and signs of infection. Timely imaging and intervention are critical. Retained IUDs in postmenopausal women may contribute to the development of chronic pelvic infection and abscess formation. Multidisciplinary management is essential to ensure optimal outcomes in such rare but potentially life-threatening scenarios.

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