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An extremely rare case of appendiceal abscess causing extrinsic ureteric compression and secondary hydronephrosis

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CASE REPORT

Acute appendicitis is a common condition requiring emergency surgery where patients typically present with a triad of fever, abdominal pain, and vomiting. Severe cases can result in perforation of the appendix or abscess formation. Depending on the pathological and anatomical changes, this can have variable clinically presentations. Here, we present a rare complication of appendicitis with right hydronephrosis due to direct compression of the right ureter by an appendiceal abscess.

A 48-year-old lady was referred into to the emergency department with a 3-week history of gradually worsening lower abdominal pain associated with nausea, subjective fever, and appetite loss. She had no referable urinary tract symptoms or other systemic symptoms.

Her medical history was unremarkable but she does have a family history of Crohn's disease and heavy smoking intake. On examination, the patient was afebrile and hemodynamically stable. There was voluntary abdominal tenderness and guarding in the right iliac fossa.

Laboratory workup revealed a normal white cell count, C-reactive protein (CRP) of 79 mg/L, and an acute kidney injury with creatinine rise to 90 umol/L and 65 mL/min/1.73 m^2. Urine analysis was unremarkable. An abdominal computed tomography (CT) was performed and revealed a 45 mm fluid collection around the distal tip of the appendix (Figure 1). This collection abuts the right ovary and the right ureter, resulting in a ureteral obstruction and associated right sided hydronephrosis (Figure 2). Percutaneous drainage of this collection was not possible due to the anatomical location. Fluid resuscitation and broad-spectrum intravenous antibiotic

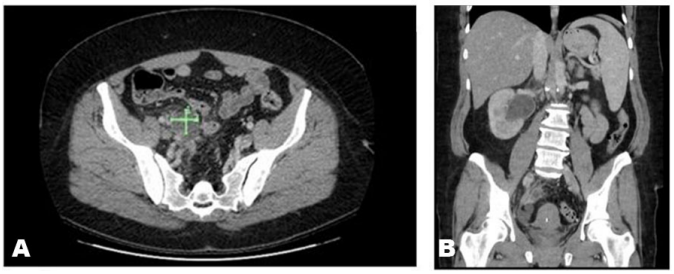

Figure 1: (A) Axial CT scan showing a perforated appendix with periappendiceal abscess (green arrows). (B) Coronal view showing association with prominent right hydronephrosis.

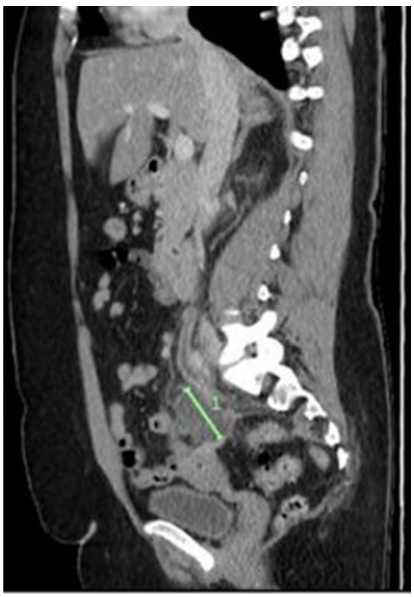

Figure 2: Sagittal view of CT abdomen/pelvis with intravenous contrast showing the appendiceal abscess compressing the right ureter (green arrow).

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therapy were initiated on admission. The patient was consented for a laparoscopic drainage procedure, with an understanding that open drainage may be required.

During the operation on the following day, laparoscopic drainage was abandoned due to poor safe access to the abscess and open drainage was achieved through a standard Lanz incision, and a drain was left in situ. No extensive attempt was taken to identify the obscured appendix. The patient recovered well post-operatively and was discharged home the following day with a course of oral antibiotic. The drain remained in situ, and the patient was followed up in the outpatient clinic.

A follow-up outpatient colonoscopy and a computed tomography of kidneys, ureters, and bladder (CT-KUB) were performed 1-month post-discharge. The CT-KUB showed good resolution of the appendiceal collection and hydronephrosis. The colonoscopy confirmed sigmoid diverticulosis, two benign polyps and no other abnormalities. Nonetheless, because the patient had complaints of on-going abdominal pain, she was taken back to operating theatre five weeks after the initial surgery for an interval laparoscopic appendectomy. The operation was uncomplicated, and histology of the appendix revealed no evidence of residual appendicitis. Lastly, a final ultrasound of the kidneys, ureters, and bladder (US-KUB) was performed three weeks later and showed complete resolution of the right hydronephrosis. Blood tests revealed baseline renal function. The patient was then discharged from surgical service.

DISCUSSION

Hydronephrosis secondary to appendicitis is rare and comprises only 3.5% of all cases of appendicitis [1, 2]. Most of these cases result from inflammation progression through the posterior parietal peritoneum resulting in segmental ureteral ileus, similar to bowel ileus seen with peritonitis [3]. Other rare causes include adhesions, uretero-appendiceal fistula, and appendicular actinomycosis [4]. Interestingly, despite the close proximity of the appendix to the right ureter, direct compression of the right ureter by an appendiceal abscess is rarely the isolated cause to this manifestation [5–7]. Here, we present a case with clear radiological evidence to demonstrate such a rare phenomenon.

Traditionally, complicated appendicitis with abscess formation is managed conservatively with broad spectrum antibiotics followed by an interval appendectomy [8]. This is because an immediate operation may be technically difficult due to distorted anatomy and extensive inflammation tissue. Drainage of abscess for source control, whether laparoscopic or percutaneous, may be considered and has some evidence showing an improved clinical outcome [9]. One clear advantage of such approach is the instant decompression of the right ureter and good resolution of the associated hydronephrosis, as demonstrated in this case. Nonetheless, due to the rarity of this occurrence, more data is needed to validate such a treatment approach.

Furthermore, conservative management of complicated appendicitis has risks of missing or delaying diagnosis of uncommon colonic diseases, such as malignancy or Crohn's disease. For this reason, an outpatient CT scan and colonoscopy to exclude alternative differentials are usually warranted [9]. This management was particularly important in this case given a known family history of Crohn's disease. In addition, these investigations also allow surgeons to monitor patient's progress and plan a surgery if needed. Nonetheless, we believe such approach must be balanced with consideration of patient demographics to minimize unnecessary radiation, particular to younger people.

CONCLUSION

In summary, this case illustrates that appendiceal abscess may result in direct ureteral compression in rare circumstances, and timely drainage of such collection can result in good resolution of renal function. We agree that conservative management of the acutely inflamed appendix in such scenario is a reasonable approach given the technical difficulty of an emergent operation. However, if one chooses to adopt such method, alternative differentials must be considered and thoroughly investigated with CT investigation and a colonoscopy. Overall, the literature suggests that an interval appendectomy should be considered and we would recommend a thorough discussion with the patient to avoid future recurrences.

Keywords: Appendiceal abscess, Hydronephrosis, Ureteric compression

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Author Contributions

Tedman Cheuk-Yiu Chau – Conception of the work, Design of the work, Acquisition of data, Analysis of data, Interpretation of data, Drafting the work, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Nicholas Wen-Sheng Lee – Analysis of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

David Dunn – Analysis of data, Revising the work critically for important intellectual content, Final approval of the version to be published, Agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved

Guarantor of Submission

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Written informed consent was obtained from the patient for publication of this article.

Conflict of Interest

Authors declare no conflict of interest.

Data Availability

All relevant data are within the paper and its Supporting Information files.