CASE REPORT

Retroperitoneal Ascariasis: A Case Report

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Infection with adult Ascaris primarily occurs in the gastrointestinal system, but physical migration other than this has been reported. To date, only a small number of cases have been reported to involve the urinary system and no report of Ascariasis migration to the retroperitoneal space.
This is a case of a 38-year-old female admitted as a case of perinephric abscess, renal mass right. Patient was initially managed conservatively with broad spectrum antibiotics and tube drainage, but with the deteriorating condition, an exploratory laparotomy, with retroperitoneal exploration was done. During exploration, no colonic fistula was noted. The renal parenchyma was noted to be pinkish with a 1cm opening at the mid lateral pole associated with purulent discharge. Interestingly, a 6cm x 1cm wax-like, moving structure was found in the retroperitoneal space The object was removed with Debakey forceps and was determined to be *Ascaris lumbricoides* by histopathology. Fecal analysis of stool for ova and parasites was negative for Ascaris. The patient then had an uneventful recovery.
Currently, there are only two theories on how *Ascaris lumbricoides* can be introduced into the urinary system. The first includes fistulation between the GI and urinary system and second by retrograde migration of the adult worm through the urethra. Given the current data, the authors believe that the patient experienced retrograde invasion of Ascaris through the urethra, and subsequently migrated to the retroperitoneal space through fistulation.
Ascariasis of the genitourinary tract is a rare condition. This is the first reported case of ascariasis in the retroperitoneum.

Keywords: *Ascaris lumbricoides,* perinephric abscess

Introduction

Infection with adult Ascaris primarily occurs in the gastrointestinal system, specifically at the area of the hepato-pancreatic ducts but physical migration to the peritoneum, thoracic duct, pulmonary vessels, uterus, cervix and even the central nervous system (CNS) has been reported. Reported mechanisms of migration are not limited to hollow organ physical migration but also through fistulation.

To date, only a small number of cases have been reported to involve the urinary system and no report of *Ascariasis* migration to the retroperitoneal space. This case report is about a unique and extremely rare case of *Ascaris lumbricoides* presenting as perinephric abscess that has caused fistulation from the urinary tract to the retroperitoneal space.

The Case

This is a case of a 38-year-old female who sought consult at the emergency room with complaint of intermittent right flank pain described as dull, non-radiating, for two weeks following a one week history remittent fever and

loss of appetite. She denied any history of urolithiasis or urinary tract infection. Physical examination revealed normal except for right costovertebral angle tenderness.

At the emergency room, kidney, ureter and urinary bladder ultrasound revealed a right perinephric abscess with a widest diameter of 3cm and an incidental finding of a 3cm x 3cm x 3cm renal mass at the superior pole. Complete blood count revealed leukocytosis of 15000/mm^3 with predominance of neutrophils. Urinalysis was unremarkable. She was then admitted as a case of right flank pain secondary to perinephric abscess, renal mass right and was started with broad spectrum antibiotics.

CT Urogram revealed an enlarged non-functioning right kidney (Figure 1), perinephric abscess 3cm with no renal mass noted (Figure 2). She was scheduled for percutaneous drainage of perinephric abscess due to continuing right flank pain and persistent leukocytosis despite broad spectrum antibiotic regimen for one week duration.

During percutaneous drainage, there was note of purulent, foul smelling discharge amounting to 150cc. Culture specimen revealed *E. coli* heavy growth sensitive to Ertapenem and subsequent referral to infectious disease specialist was done. Culture-guided antibiotics were continued for two weeks duration.

Despite antibiotics and drainage, leukocytosis persisted, now at 27000/mm^3. There was worsening of symptoms; now with severe right flank pain radiating to the right axilla associated with remittent moderate to high grade fever. She

Figure 1. Coronal images of the CT scan show a non-functioning right kidney.

then developed diffuse flank erythema, with dull crepitus over the right rib cage associated with a 2cm x 2cm x 2cm pustule at the right flank (Figure 3). Emergency incision and drainage was done and approximately 100cc of purulent foul smelling discharge was noted. Culture of the abscess site revealed no growth. Wound flushing with isotonic saline and dressing were done twice daily.

After the incision and drainage (I&D), the patient's condition was noted to improve and minimal pus was coming out of the fistula. A renal scan was done which revealed a right kidney relative function of 19%, 25ml/min. Daily wound

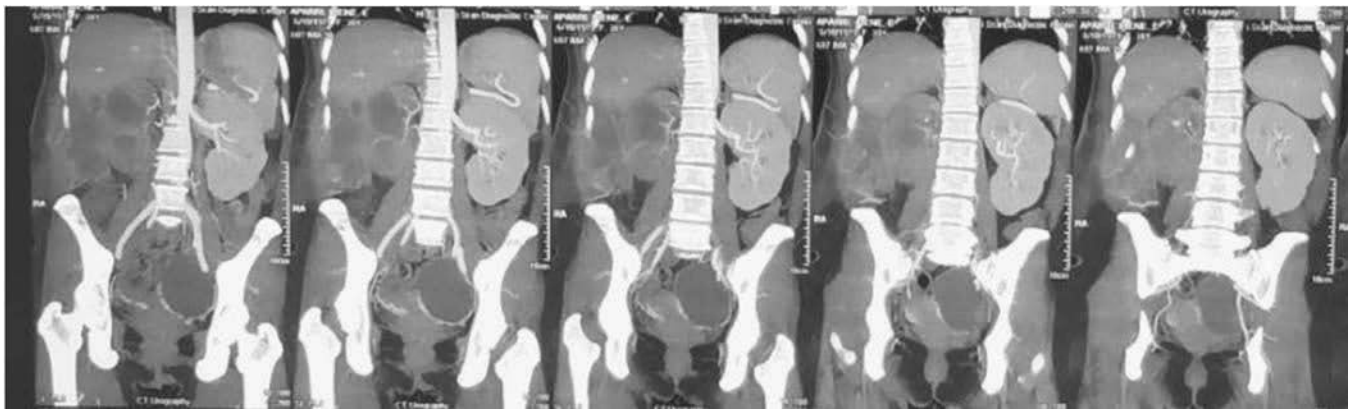

Figure 2. Coronal images of the CT scan showing perinephric abscess with no evidence of obstruction.

Figure 3. Images of the right flank erythema with discharge at the pustule site.

care and copious flushing was continued. However, on day 7 post I&D, the patient presented with diffuse flank pain, with a pain scale of 10/10 with copious amount of foul smelling discharge from the fistula amounting to 500cc. She was then sent to the operating room for emergency exploratory laparotomy, with retroperitoneal exploration. During exploration, the ascending colon was densely adherent to the right paracolic gutter. Adhesiolysis was done and no colonic fistula was noted. Upon opening the retroperitoneum, the renal parenchyma was noted to be pinkish (Figure 4) with a 1cm opening at the mid lateral pole associated with purulent discharge. Interestingly, a 6cm x1cm wax-like, moving structure (Figure 5) was found in the retroperitoneal space. The object was removed with Debakey forceps and sent to pathology for review. Inspection of the kidney and copious flushing did not reveal additional adult worms. A large bore percutaneous drain was left, and the previous abscess site post I&D was left to heal through secondary intention. Histopathology revealed to be *Ascaris lumbricoides* adult worm.

The patient then had an uneventful recovery. Fecal analysis of stool for ova and parasites was negative for Ascaris. She was then discharged from the hospital with an improved condition.

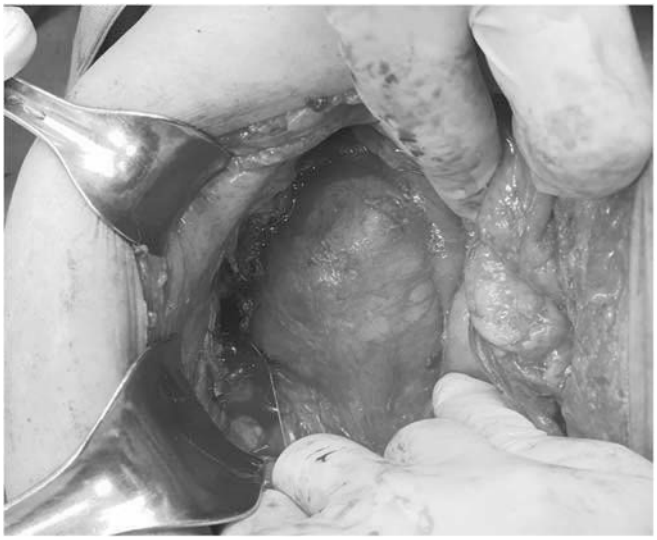

Figure 4. Image of the right kidney intraoperatively.

Figure 5. Adult worm of *Ascaris lumbricoides* after extraction at the retroperitoneal space.

Discussion

Ascaris larva is known to mature only in the gastrointestinal tract. No mention of its development happens in the urinary tract.

However, with its propensity to migrate in the different parts of the GI tract, it is not impossible for it to invade the surrounding systems in the body. Extraintestinal manifestations of ascariasis due to migration of adult worms include biliary obstruction, bile duct perforation with peritonitis, ascending cholangitis and acalculous cholecystitis due to the migration to the hepatobiliary system, acute respiratory distress due to the migration to the lungs. However, migration to the urinary system is very rare.[1]

Currently, there are only two theories on how *Ascaris lumbricoides* can be introduced into the urinary system. The first entails fistulation between the GI and urinary system and second is through retrograde migration of the adult worm through into the urethra. It has been proposed that the latter is mainly precipitated by stressful conditions which include fever, illness or prior anthelmintic medications.[1]

There are only a few reports which describe ascariasis in the urinary tract and most of these report ascaris in the urinary bladder. Quick, et al. described a 39-year-old male who presented with painless hematuria and having a 6-inch worm exit his urethra while urinating. Further investigation showed no communication between the gastrointestinal tract and the urinary system while fecal analysis for ova and parasites was negative for Ascaris.[2]

Another study by Gupta, et al. described a case of a 55-year-old male presenting with anuria with anasarca. After urethral catheterization, two adult worms passed through the urinary catheter into the urine bag.[3] Singh, at al. reported a case of a 35-year-old female with acute urinary retention following tingling sensation in the urethra that started two days after anthelmintic (Mebendazole) treatment. Adult worms were excreted through the urinary catheter. Two Ascaris worms came out through the anus in the next 24 hours following treatment.[4]

Bustamante-Sarabia, et al. described a case of a 25-year-old female with a history of three adult Ascaris worms coming out of a subcutaneous abscess. The patient eventually expired and autopsy revealed a colo-uretero-cutaneous fistula connecting the abscess, proximal third of the left ureter and the transverse colon. Ipsilateral ureteral obstruction by a one cm stone was found incidentally, and was presumptively the reason why fistulation was possible.[5]

The authors believe that the patient experienced retrograde invasion of Ascaris through the urethra, dwelled in the kidney and subsequently migrated to the retroperitoneal space through fistulation and presented as an abscess. At the time of admission up to the time she presented with right flank abscess, she was febrile with leukocytosis which could have precipitated the urinary migration of the Ascaris worm.

Conclusion

Ascariasis of the genitourinary tract is a rare condition. This is the first reported case of ascariasis in the retroperitoneum.

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