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Ascaris Lumbricoides in the Urinary Tract: A Rare Case of Acute Urinary Retention and Comprehensive Literature Review

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Abstract | **Case Report**

Ascaris lumbricoides is a common intestinal parasite in humans, but its presence in the urinary tract is extremely rare. We report the case of a 55-year-old man admitted with lower urinary tract symptoms complicated by acute urinary retention. Catheterization revealed the spontaneous expulsion of a bladder stone and a worm, later identified as *Ascaris lumbricoides*. Stool examinations for ova and parasites were negative. Imaging studies showed a 9 mm pelvic ureteral stone and a 12 mm intravesical stone, while cystoscopy revealed inflammatory changes consistent with chronic cystitis. No evidence of enterovesical fistula was found. Based on clinical and radiological findings, retrograde urethral migration of the parasite was considered the most likely mechanism. Urinary ascariasis is an exceptional condition, with only a few cases described in the literature involving the bladder, ureter, or kidney. This case highlights the importance of considering parasitic infestation in patients with atypical urinary symptoms, particularly in endemic regions.

Keywords: Ascaris Lumbricoides, Urinary Ascariasis, Acute Urinary Retention, Bladder Stone, Urolithiasis, Case Report, Genitourinary Parasitosis.

I. INTRODUCTION

Ascaris lumbricoides is a nematode (roundworm), an intestinal parasite responsible for ascariasis, a strictly human disease. Its usual habitat is the gastrointestinal tract, particularly the hepatopancreatic region. Clinical manifestations are closely related to its life cycle, which involves migration from the lungs to the intestine. Genitourinary involvement is extremely rare and usually associated with systemic diseases such as Crohn's disease, abdominal tuberculosis, or abdominal malignancies, which may create a fistulous connection with the urinary tract.

We report an exceptional case of Ascaris lumbricoides presenting as acute urinary retention in an adult male, along with a review of the available literature.

II. CASE REPORT

A 55-year-old man was admitted through the emergency department with lower urinary tract symptoms, including storage (pollakiuria) and voiding (dysuria) complaints, complicated by acute urinary retention requiring drainage with a cystocatheter. During catheterization, the patient spontaneously expelled a calculus [Figure 1].

The patient's past medical history included recurrent urinary and digestive disturbances as well as episodes of bronchopneumonia. Clinical examination revealed tenderness over the left lumbar fossa and hypogastric region. Digital rectal examination showed a benign, soft prostate estimated at 25 cc. Upon emptying the collection bag, the nurse observed a worm, later confirmed as Ascaris lumbricoides [Figure 2]. Stool examinations for ova and parasites were negative. A thorough clinical, radiological, and endoscopic assessment excluded the possibility of an enterovesical fistula.

A CT urogram revealed a 9 mm pelvic ureteral calculus on the left side (HU 1400) causing minimal hydronephrosis, as well as a 12 mm intravesical calculus (HU 1500). Cystoscopy demonstrated an inflammatory lesion consistent with chronic cystitis [Figure 3].

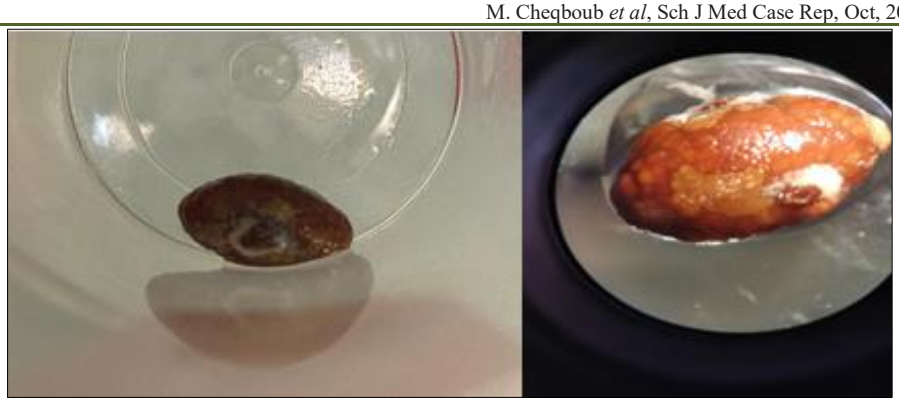

Figure 1: Intravesical brownish calculus measuring 12 mm with a calcified density.

Figure 2: Whitish-pink worm, 4 cm in length, consistent with a female Ascaris lumbricoides.

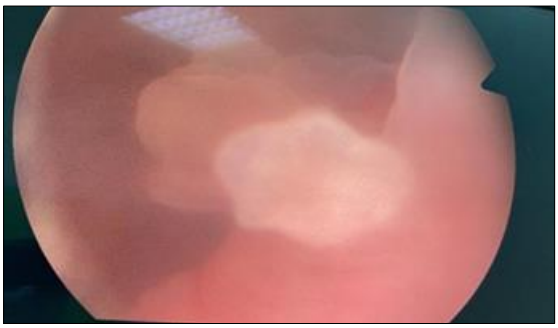

Figure 3: Non-urothelial appearing trigonal lesion, 2 cm, smooth-surfaced, consistent with chronic inflammatory changes

Routine blood work, urinalysis, chest X-ray, abdominal CT, intravenous pyelography, and cystourethroscopy with retrograde pyelography revealed no additional abnormalities. No other source of Ascaris infestation was identified. The patient was discharged in a satisfactory condition.

III. DISCUSSION

Ascariasis is a cosmopolitan helminthiasis, frequently encountered in countries with low hygiene standards. It is caused by a nematode strictly specific to humans, Ascaris lumbricoides. Transmission occurs through ingestion of eggs contained in food contaminated with human fecal matter. The infection may be asymptomatic and discovered incidentally. Löffler's syndrome may occur during the invasion phase, while gastrointestinal symptoms predominate during the established phase. In cases of massive infestation, severe surgical complications may occur due to intestinal obstruction or impaction of the adult worm in an accessory digestive duct. The biological diagnosis is mainly based on the detection of eggs in stool samples [1].

Previous studies have shown that maturation of Ascaris larvae into adult worms is only possible in the

gastrointestinal tract and the respiratory tree. Currently, there are only two theories as to how Ascaris lumbricoides may be introduced into the urinary system: either through the formation of a fistula between the gastrointestinal and urinary systems, or through retrograde migration of the adult worm into the urethra. Urethral migration is generally precipitated by stressful conditions such as fever, illness, anesthesia, or prior administration of anthelmintic agents [2].

The bladder is the most frequently reported site of urinary ascariasis. Only three other case reports describe the presence of Ascaris in other parts of the urinary system. Bohdan Baralo [3], reported the case of a 30-year-old woman presenting with renal colic and upper urinary tract obstruction. This was the first case of ureteroscopic extraction of Ascaris lumbricoides found in the distal third of the ureter. We believe that our patient underwent retrograde invasion of Ascaris through the urethra. No signs of fistulization were present, either radiologically or upon direct visual inspection.

Quick *et al*., [4], reported the case of a 39-year-old man who expelled the worm during micturition, with no symptoms other than tingling in the penis and painless gross hematuria. Further investigations revealed no connection between the gastrointestinal and urinary tracts, but did show a right renal calculus. Stool and parasite examinations were negative for Ascaris.

Gupta *et al*., [5], described the case of a 55-year-old man with generalized edema and anuria. After catheterization, two worms were trapped in the urine collection bag. Singh *et al*., [6], reported the case of a 35-year-old woman presenting with acute urinary retention that started two days after mebendazole treatment. In this case, Ascaris lumbricoides was excreted through the urinary catheter. Stool analysis also revealed Ascaris, and two adult worms were expelled per rectum within the following 24 hours.

Bustamante-Sarabia [7], described the case of a 25-year-old woman with a history of three adult Ascaris worms emerging from a subcutaneous abscess. At postmortem examination, a fistula was discovered connecting the transverse colon, the proximal third of the left ureter, and the subcutaneous tissue. Six live adult Ascaris worms were found occupying the renal pelvis and major calyces. The ipsilateral mid-ureter was obstructed by a one-centimeter calculus, which was most likely the reason why only retrograde migration and fistulization were possible.

Taylor [2], reported the case of a six-year-old boy who was hospitalized a few days after initiation of anthelmintic therapy. He had originally been admitted for abdominal pain, cough, anorexia, fever, and passage of two adult Ascaris worms through the urethra. Isotopic renal scintigraphy revealed that the right kidney was non-functional and was surgically removed. Pathological examination demonstrated the presence of Ascaris lumbricoides ova in the renal specimen.

Based on the current evidence, we believe that our patient experienced retrograde invasion of Ascaris through the urethra. No signs of fistulization were present, either radiologically or on direct visual inspection. Furthermore, the patient had neither a recent illness nor prior anthelmintic treatment that could have precipitated urinary migration of Ascaris.

IV. CONCLUSION

Genitourinary ascariasis is exceedingly rare, as it does not belong to the parasite's natural migratory pathway from lungs to intestines. The mechanism remains unclear, but proposed routes include transurethral entry or migration through an enterovesical fistula. Clinicians should be aware of this unusual presentation when evaluating patients with atypical urinary symptoms in endemic regions.

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