

Balantidium Coli in Urine Microscopy: A Mere Coincidence or More

Pratibha Mane, Jyoti Sangwan* and A.K. Malik

Department of Microbiology, SHKM GMC, Nalhar, Mewat, Haryana, India

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ABSTRACT

Balantidium coli (*B. coli*) is a trophic ciliate of low virulence which can cause dysentery in humans.

The organism is cosmopolitan in nature and can be found wherever pigs are present. Disease is mostly seen in developing countries, where water sources are frequently contaminated with porcine or human feces. *B. coli* can become an opportunistic parasite in individuals with immunosuppression in urban environments, where pigs do not play a role in infection. We herein describe a case where trophozoites of *B. coli* were detected in urinary sediment examination of an elderly male presenting with urinary tract infection. The parasites were identified by their characteristic morphology and rapid spiraling motility. To best of our knowledge, this is only the fifth case described in Indian literature to detect *B. coli* in urine sediment.

***Corresponding author:**

Dr Jyoti Sangwan, Assistant Professor, Dept of Microbiology, SHKM GMC, Nalhar, Mewat, Haryana, 122107. INDIA

Phone: +91 8199972271

E-mail: jyolathwal@yahoo.co.in



Introduction

Balantidium is the only ciliated protozoon known to infect humans and is the largest protozoon infecting humans and nonhuman primates. Balantidiosis is a zoonotic disease and is acquired by humans via the fecal-oral route from the normal host, the pig, where it is asymptomatic. Water is the vehicle for most cases of balantidiosis. Human-to-human transmission may also occur. *Balantidium*'s habitats in humans are the cecum and colon. Humans may remain asymptomatic, as does the pig, or may develop dysentery. In developing countries with undernourished and over parasitized populations, it can make the difference between a healthy life and chronic debilitation.^[1]

Case Report

In July 2013 a 60 year old male presented with complains of fever, increased frequency and burning micturition associated with lower abdominal pain radiating from loin to groin on right side of seven days duration. Also he complained of decreased urine output for last three days. On examination, he was febrile with temperature 102° F, pulse was 100 per min and BP was 130/90mm Hg and had BMI of 16.8kg/cm². Pallor was present. Abdomen was soft, tenderness was positive in renal angle. Other systems were within normal limits.

A complete haemogram showed microcytic hypochromic anaemia with an Hb level of 9.0 gm%. Serology done for HIV and HBsAg were negative. His kidney functions were found to be deranged, with urea -50 mg/dl and creatinine -1.8 mg/dl. His liver function and blood sugar were found to be within normal limits.

His fresh mid stream urine (MSU) sample was sent for routine and microscopic examinations and culture sensitivity. The urine physically appeared as mildly turbid. Urinalysis, by dipstick, showed pH 5.0, specific gravity 1.008 and negative albumin, hemoglobin, leukocyte esterase and nitrites. Urine proteins were absent. Microscopic examination of its sediment showed a few red cells with 2-4 pus cells per HPF. Also, ovoid to oblong ciliated parasites which were approximately 70 x 50 µm, were seen swimming rapidly across the slide [Fig-1] Its body was covered with short, delicate cilia which were all of uniform length. The cilia which lined the mouth part appeared to be longer than others. The morphology and swimming pattern were characteristic of *Balantidium coli*. Subsequent culture grew *Escherichia coli*, which was sensitive to ciprofloxacin, imipenem and amikacin. Patient was prescribed oral ciprofloxacin 500 mg twice/day for five days and advised to come for review with ultrasound report after a week.



Fig. 1: Microscopic examination showing ovoid to oblong ciliated parasite (Magnification 10x 40).

A week later on review patient complained of persisting symptoms and his USG report showed presence of mild hydronephrosis on right side and no calculi. A repeat MSU sample was sent for routine, microscopy and culture. Urine was mildly turbid. Microscopic examination of its sediment showed 2-4 red cells with 2-4 pus cells per HPF. Again presence of ciliated trophozoites of *Balantidium coli* was noticed with their characteristic motility. We did not observe any cyst. This time culture was sterile. After these findings, a search of *B. coli* in the feces was performed, which turned out to be negative in three consecutive samples. On questioning, the patient denied direct contact with pigs but admitted of bathing in contaminated pond water which they also use for their routine chores as he was from lower socio-economic background. He gave history of recurring diarrhea in the past for which he has taken treatment on and off. The patient was treated with tetracycline 500 mg four times daily and metronidazole 250 mg three times daily, for a total duration of seven days. His MSU sample was re-examined after a week, following treatment completion, in which no *B. coli* trophozoites were observed, probably due to successful therapy. Even following up after a month patient did not have recurrence in symptoms which again point towards successful therapy.

Discussion

Balantidium coli are low virulence pathogenic parasites with worldwide distribution. Usual mode of transmission is ingestion of infective cysts through water contaminated with porcine feces, though human to human transmission may also occur. Ingested cysts liberate trophozoites which reside and replicate by binary fission in the large bowel.^[1] This patient had no contact with pig, but had history of bathing in the pond; hence he might have been infected

from contaminated water of the pond. Many patients remain asymptomatic but some have persistent diarrhea and a few develop more fulminant dysentery.^[2] Intestinal hemorrhage, ulceration, focal necrosis and perforation can occur and mediated by the production of balantidial proteolytic enzyme. Extra intestinal spread has also been described. The organism may have invaded from the colonic mucosa to the urinary bladder or directly from the anal area.^[3-4] Sharma and Harding opine that infection of genitourinary sites occur due to direct spread from the anal area or secondary to rectovaginal fistula creation by the parasite.^[3] The stool examination in this patient was non contributory possibly due to intermittent treatment with metronidazole. Immunocompromised individuals, malnutrition and alcoholism appear to act as important contributory factors for balantidiosis.^[5-6] Our patient was malnourished (16.8kg/cm²) and anaemic (9.0 gm%).

Laboratory diagnosis of *B. coli* is relatively easy because of its large size and spiraling motility. In most of the cases morphology of the trophozoite has been described in dysenteric stool and the cyst phase commonly in formed stool.^[1] In this patient excellent morphology of the parasite could be demonstrated in urine sample by light microscopy. Tetracycline and metronidazole are the drugs of choice for *B. coli*.^[1] Ensuring clean uncontaminated water supply is probably the most efficient strategy to prevent human infection. Not much data is available on the prevalence of urinary Balantidiosis in India or worldwide. An internet search revealed only five cases which were reported, one each from Italy and Tehran and three from India.^[4, 7-9] Though many cases of *B. coli* infection in stool have been reported from India, both in humans and animals, urinary balantidiosis is still a rare entity.^[9, 10] To the best of our knowledge this is the fifth case report of urinary Balantidiosis from India.

Conclusion

In conclusion, *B. coli* though a rare urinary pathogen, should come in the differential diagnosis in elderly debilitated patients presenting with urinary tract infection. Microscopic examination of fresh urine sediment can easily diagnose this large parasite by its characteristic morphology and rapid spiraling motility.

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Competing Interests

None Declared

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