

Entamoeba histolytica in urine: a case report

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Summary

Background: *Entamoeba histolytica* is an anaerobic protozoan parasite predominantly affecting the gastrointestinal tract but capable of systemic dissemination to organs such as the liver and lungs. Detection of *Entamoeba histolytica* in urine is an exceptionally rare occurrence, typically associated with severe or invasive forms of amoebiasis.

Case Report: we report a case of a 17-year-old female patient who presented with dysuria, suprapubic pain, and hematuria. Urine microscopy demonstrated spherical cysts (~15 µm in diameter) morphologically consistent with *Entamoeba histolytica*, containing intracytoplasmic erythrocytes. The diagnosis was confirmed by stool analysis and serological testing. Abdominal ultrasonography revealed mild bladder wall thickening, with no evidence of hepatic abscess or other extraintestinal involvement. The patient had no history of surgical interventions. Treatment with metronidazole followed by paromomycin achieved complete resolution of symptoms, confirming therapeutic success.

Conclusions: identification of *Entamoeba histolytica* in urine, although uncommon, is clinically significant and necessitates awareness of atypical presentations. This case emphasizes the importance of integrating parasitological, serological and imaging tools for timely diagnosis and management of extraintestinal amoebiasis.

Introduction

Entamoeba histolytica is an anaerobic parasitic protozoan of the genus *Entamoeba* that primarily infects human intestinal tissue but can disseminate to extraintestinal sites, notably the liver and lungs. The water sanitation issue together with limited water access in poor areas contributes to worldwide amoebiasis cases [10].

Entamoeba histolytica infection maintains its status as a dominant parasitic cause of fatalities and sickness since it causes 50 million cases and kills more than 55,000 people annually [4].

Entamoeba histolytica completes its life cycle by progressing through two different stages: the infectious cyst resists damaging conditions while spreading disease and the infective trophozoite penetrates tissues to cause illness. Consuming contaminated food or water containing cysts leads to transmission because sanitary practices play a vital role in preventing such

diseases. The medical community faces amoebiasis as a substantial public health issue mainly because of its prominence in areas with limited resources [2,5].

Identification of *Entamoeba histolytica* in urine sample is extremely rare finding. The aim of the study is to document and analyze a case of *Entamoeba histolytica* isolation from the urine samples.

Case Report

A 17-year-old female presented with dysuria, suprapubic pain and hematuria for three weeks. She experienced occasional diarrhea with abdominal pain during the last month. She had recently traveled to an area which lacked proper sanitation as well as sufficient clean water supply. She had not undergone any prior surgical procedures.

Upon clinical examination, vital signs were normal. The physical examination of the abdomen showed mild tenderness. No signs of organomegaly.

Diagnosis

Urinalysis demonstrated hematuria, and microscopic examination of urine sediment via wet mount preparation revealed spherical cysts (~15 µm in diameter) morphologically consistent with *Entamoeba histolytica*, containing one to five erythrocytes (Figure 1). To exclude fecal contamination, urine samples were collected under standardized protocols, including catheterization, and stool specimens were obtained at staggered intervals. Subsequent stool microscopy confirmed the presence of *Entamoeba histolytica* cysts. Serological testing by Enzyme-Linked Immunosorbent Assay (ELISA), which detects target molecules through antigen-antibody binding and enzymatic colorimetric reactions, yielded positive results for *Entamoeba histolytica* antibodies. Abdominal ultrasonography indicated mild bladder wall thickening. Physical examination (vital signs, abdominal palpation) and imaging (colonoscopy, Computed Tomography, CT) ruled out colonic diverticula.

Treatment

The patient was given metronidazole tablet (750 mg x3) for 10 days and paromomycin capsule (500 mg x3) for seven days.

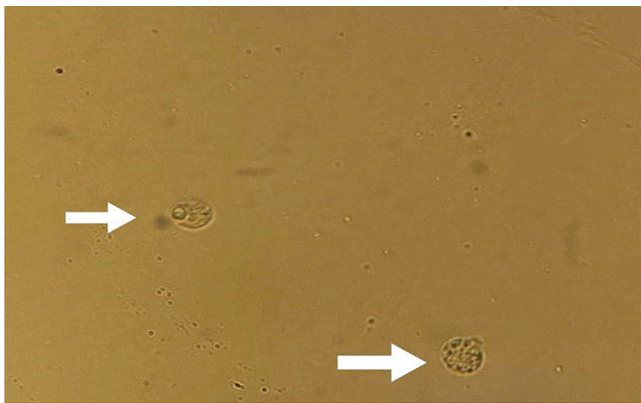


Figure 1. Urine sample under light microscope 40X, showing rounded (cystic form) with dot-like karyosome (white arrows) consistent with cysts of *Entamoeba histolytica*.

Follow-up

The patient exhibited significant symptomatic improvement within the initial 72 hours of treatment and achieved complete resolution of symptoms by the end of the therapeutic course.

Discussion

Entamoeba histolytica primarily colonizes the human gastrointestinal tract, manifesting with a broad clinical spectrum ranging from asymptomatic infection to severe complications, including amoebic dysentery and hepatic abscess formation. Common genitourinary manifestations may include hematuria, dysuria, flank pain, and diarrhea. Renal abscesses and amoebic cystitis typically develop secondary to direct extension of hepatic abscesses across the diaphragmatic barrier or through hematogenous dissemination. Documented cases of hepatovesical fistulization further demonstrate the parasite's ability to migrate into the urinary system, with detectable cysts or trophozoites in urine sediment. These findings underscore the importance of clinical vigilance for amoebiasis in patients with prior infection history or recent travel to endemic regions [3].

Urine diagnosis of *Entamoeba histolytica* presents a very infrequent yet highly important phenomenon which occurs during genitourinary invasive amoebiasis. The parasitic pathogen *Entamoeba histolytica* principally causes gastrointestinal infection, yet its capacity for extraintestinal dissemination to the liver, lungs, central nervous system, and genitourinary tract necessitates clinical consideration during diagnostic evaluation in endemic regions [1]. The patient's *Entamoeba histolytica* urinary tract infection likely originated via hematogenous dissemination or direct contiguous spread from gastrointestinal foci.

The detection of *Entamoeba histolytica* in urine samples is clinically significant in cases involving severe complications, including hepatourinary fistulas, direct urinary tract invasion, or hematogenous dissemination [8]. In the present case, microscopic examination of centrifuged urine sediment consistently demonstrated spherical amoebic cysts (~15 µm in diameter) containing 1-5 erythrocytes, along with 10-20 pus cells and numerous erythrocytes per high-power field. Concurrent stool microscopy via direct smear confirmed the presence of *Entamoeba histolytica* cysts. Notably, abdominal ultrasonography revealed no evidence of hepatic involvement.

Medical professionals face multiple hurdles when making a diagnosis of *Entamoeba histolytica* through urine examination. During uncomplicated intestinal infections this parasite does not normally appear in urine thus its detection in this material remains a quite unusual occurrence. Two challenges pertaining to diagnosing *Entamoeba histolytica* stem from its comparable appearance with non-pathogenic amoebae including *Entamoeba dispar* and *Entamoeba moshkovskii*. The conventional microscopy examination serves many clinical benefits but fails to differentiate between *Entamoeba histolytica* species and other parasites leading to possible inaccurate findings [7].

Molecular diagnostic methods, particularly Polymerase Chain Reaction (PCR), are the preferred techniques for detecting and differentiating *Entamoeba histolytica* in clinical samples, including urine. PCR-based assays targeting specific genomic sequences, along with antigen detection methods such as ELISAs, offer rapid and reliable results, even in settings with limited access to advanced molecular tools [11]. In this case, ELISAs serological testing confirmed the presence of *Entamoeba histolytica*-specific antibodies

Imaging tests like ultrasound or computed tomography is useful to determine tissue damage extent in patients with genitourinary involvement [6]. In this case the abdominal ultrasound revealed only slight bladder wall thickness.

Public health ramifications become more extensive when *Entamoeba histolytica* exists in urinary samples especially with in regions with endemic rates. The health sector must prioritize better water services and hygiene education efforts [9].

Treatments for invasive amoebiasis start with nitroimidazole derivatives metronidazole or tinidazole which must be followed by paromomycin or diloxanide furoate for eliminating residual intestinal infection. This case was treated with metronidazole (750 mg orally consumed three times per day for 10 days). The addition of paromomycin as an oral medication at (500 mg three times daily during seven days) helped remove intestinal cysts.

Research is needed to better understand the mechanisms underlying the dissemination of *Entamoeba histolytica* to the genitourinary system and its clinical implications. Studies exploring the utility of non-invasive diagnostic methods, such as urine antigen detection or PCR, in routine clinical practice could enhance early diagnosis and improve patient outcomes. Additionally, the development of point-of-care diagnostic tools and vaccines against *Entamoeba histolytica* remains a critical area of investigation, with the potential to significantly reduce the global burden of amoebiasis.

This case report has limitations; while the serological ELISA test demonstrated positive results for *Entamoeba histolytica* antibodies, PCR confirmation was not available due to resource limitations in the healthcare facility.

Conclusions

Although extremely rare, identification of *Entamoeba histolytica* in urine sample is possible. The reported case functions as an important reminder for clinical practitioners to look for unusual manifestations of parasitic diseases.

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