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ATYPICAL EPIDIDYMO-ORCHITIS WITH SCROTAL MANIFESTATION OF *ENTAMOEBA HISTOLYTICA* WITH CONCURRENT *MORGANELLA MORGANII* INFECTION.

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ABSTRACT

Epididymo-orchitis is a common cause of acute scrotal pain, typically resulting from bacterial infections, with approximately 600,000 cases diagnosed annually in the United States. While most cases are attributed to sexually transmitted pathogens such as *Neisseria gonorrhoeae* or *Chlamydia trachomatis* in younger men and gram-negative organisms like *Escherichia coli* in older patients, rare parasitic infections can complicate the clinical picture. We present the case of an 82-year-old male with a complex medical history, including severe coronary artery disease, hypertension, and a recent Transcatheter Aortic Valve Implantation (TAVI), who developed left-sided scrotal pain and swelling. Initially diagnosed with orchiepididymitis and treated with antibiotics, his condition deteriorated, leading to recurrent febrile episodes and worsening symptoms. Imaging revealed a multiseptated scrotal collection and ischemic testicular changes. Surgical exploration uncovered purulent material, which cultured *Morganella morganii*, and histopathological analysis surprisingly revealed *Entamoeba histolytica* morphology with phagocytosed erythrocytes, an exceedingly rare finding in extraintestinal amebiasis. Stool and serological tests for *E. histolytica* were negative, suggesting isolated scrotal involvement. The patient underwent left orchiectomy, received broad-spectrum antibiotics followed by targeted therapy, and recovered without recurrence over a five-month follow-up.

This case emphasizes the importance of considering rare parasitic infections in atypical or refractory presentations of epididymal-orchitis, particularly in regions where *E. histolytica* is endemic or in patients with unique clinical histories. The unusual scrotal involvement of *E. histolytica*, with only one other documented case, highlights the diagnostic challenges and emphasizes the role of a multidisciplinary approach combining surgical intervention, microbiological studies, and tailored antimicrobial therapy. This report expands the understanding of extraintestinal amebiasis and reinforces the need for vigilance in identifying rare etiologies in urological conditions.

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Keywords: Epididymo-orchitis, *Entamoeba histolytica*, scrotal infection, extraintestinal amebiasis, *Morganella morganii*.

INTRODUCTION

Amoebiasis, an infection caused by the protozoan parasite *Entamoeba histolytica*, remains a significant public health concern, particularly in regions with inadequate sanitation and limited access to clean water. The transmission of this pathogen primarily occurs via the fecal-oral route, where individuals ingest cysts through contaminated food or water. Additionally, transmission can occur indirectly through contact with contaminated hands or objects or via anal-oral contact [1].

Epidemiological data indicate that amoebiasis is prevalent worldwide, with higher incidence rates in tropical and subtropical regions. This distribution correlates strongly with socioeconomic factors, as the disease is closely associated with poor sanitation and hygiene practices. Notably, the majority of infections (approximately 90%) are asymptomatic. However, in cases of invasive amoebiasis, *E. histolytica* trophozoites penetrate the intestinal mucosa, leading to clinical manifestations such as amoebic colitis or amoebic dysentery. Symptoms of invasive disease include diarrhea, which may be watery or bloody, abdominal cramps, pain, and fever. In severe instances, trophozoites can cause ulcerations in the intestinal wall, facilitating hematogenous spread to extraintestinal sites, most commonly the liver, resulting in amoebic liver abscesses [2].

Extraintestinal amoebiasis is an uncommon manifestation of infection with *Entamoeba histolytica*, occurring when trophozoites disseminate beyond the intestinal lumen. Among these rare presentations, hepatic involvement is the predominant extraintestinal manifestation, with amoebic liver abscesses being the most frequently reported condition. Other forms, such as pulmonary, cerebral, or genitourinary amoebiasis, are exceedingly rare. Scrotal involvement, in particular, is extraordinarily uncommon, with only a single documented case in the medical literature to date. This extreme rarity underscores the uniqueness of such cases and their clinical significance [3].

The pathophysiology of scrotal amoebiasis likely involves the hematogenous spread or direct extension from a contiguous abscess, though its precise mechanism remains speculative due to its rarity. Management of these atypical cases typically includes a combination of surgical drainage to address localized abscesses and the administration of antiparasitic drugs, such as metronidazole, to eradicate systemic infection. Despite the rarity, early recognition and prompt treatment are critical to prevent complications and ensure favorable outcomes [3].

Recent advancements in diagnostic tools, such as ultrasound, computed tomography (CT), and molecular techniques like polymerase chain reaction (PCR), have significantly improved our ability to identify atypical presentations of *Entamoeba histolytica*. These technologies enable the precise differentiation of *E. histolytica* from non-pathogenic species, such as *E. Dispar*, and support more accurate diagnosis and targeted treatment strategies. Despite these innovations, the rarity of such cases highlights the ongoing need for further research to deepen our understanding of the epidemiology and pathogenesis of amoebiasis. This is particularly crucial in resource-limited settings, where

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amoebiasis remains a major cause of morbidity and mortality. Continued research will be vital for refining diagnostic methods, developing more effective therapies, and implementing comprehensive public health strategies to reduce transmission and disease burden globally [4].

CLINICAL CASE

An 82-year-old male with a complex medical history, including hypertension, dyslipidemia, acute pericarditis, lower urinary tract symptoms, unstable angina, severe single-vessel coronary artery disease treated with a drug-eluting stent, cholecystectomy, inguinal herniorrhaphy, and phakectomy, presented with recurrent scrotal pathology.

Initial Presentation:
In February 2022, the patient reported acute left testicular pain and swelling. Evaluation at Mérida Hospital, Spain, led to a diagnosis of left orchiepididymitis. Ultrasound findings suggested a millimetric abscess in the epididymis. He was discharged with oral antibiotic therapy and referred for outpatient urology follow-up.

Hospitalization and Recurrence:
In March 2022, he was hospitalized for transcatheter aortic valve implantation (TAVI). During his hospitalization, he developed a febrile episode of unknown origin, with negative blood cultures. Two weeks post-discharge, he presented with chills, progressive left scrotal pain, and swelling. Laboratory evaluation revealed leukocytosis with neutrophilia and altered coagulation parameters. Urine cultures were negative. Scrotal ultrasound demonstrated an unstructured left testis with absent Doppler flow and a multiseptated scrotal collection (Figures 1 & 2). Abdominal-pelvic computed tomography (CT) confirmed a scrotal abscess with thickened walls and no extension to the pelvis (Figures 3 & 4).

Surgical Intervention:
A left scrototomy revealed an ischemic testis encased in a pseudo capsule with significant purulent content. Culture of the purulent material isolated Morganella morganii. Given the ischemia, an orchiectomy was performed. Postoperatively, the patient received broad-spectrum antibiotics (meropenem) followed by tailored therapy based on culture sensitivity. He was discharged in stable condition 48 hours postoperatively.

Pathology and Follow-Up:
Histopathological examination identified microorganisms with morphology consistent with Entamoeba histolytica, characterized by phagocytosed erythrocytes. No evidence of neoplastic pathology was noted. Serial stool studies and serological testing for E. histolytica were negative. Over a 5-month follow-up period, the patient demonstrated complete clinical resolution without recurrence or new foci of infection, rendering subsequent antiparasitic treatment unnecessary.

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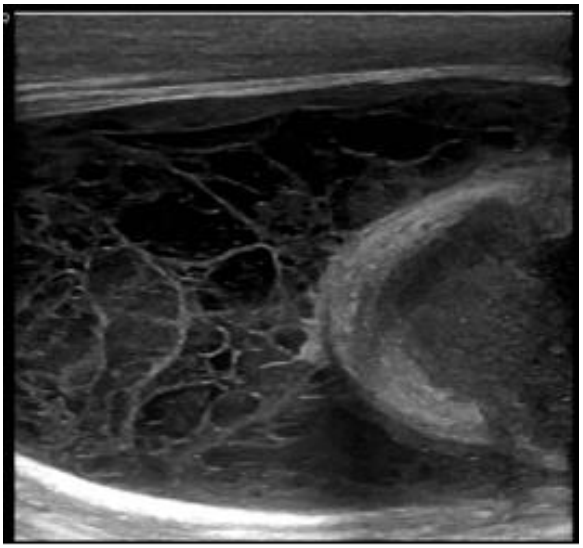

Figure 1. Scrotal ultrasound with evidence of multiseptated left scrotal collection.

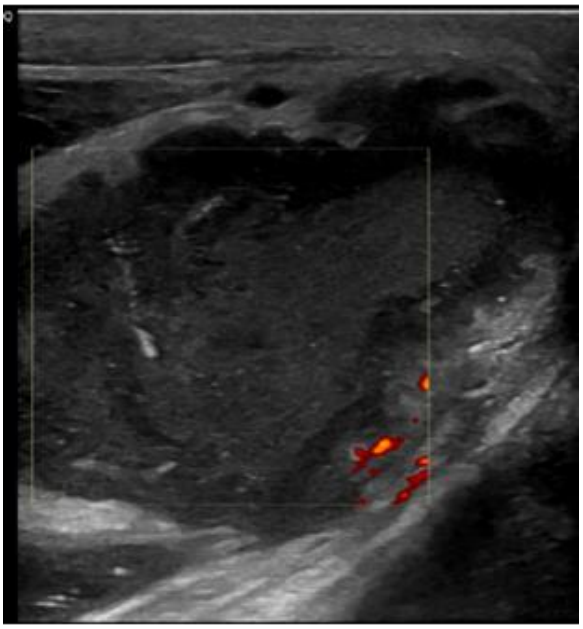

Figure 2. Left testicle Doppler without evidence of intratesticular vascular flow.

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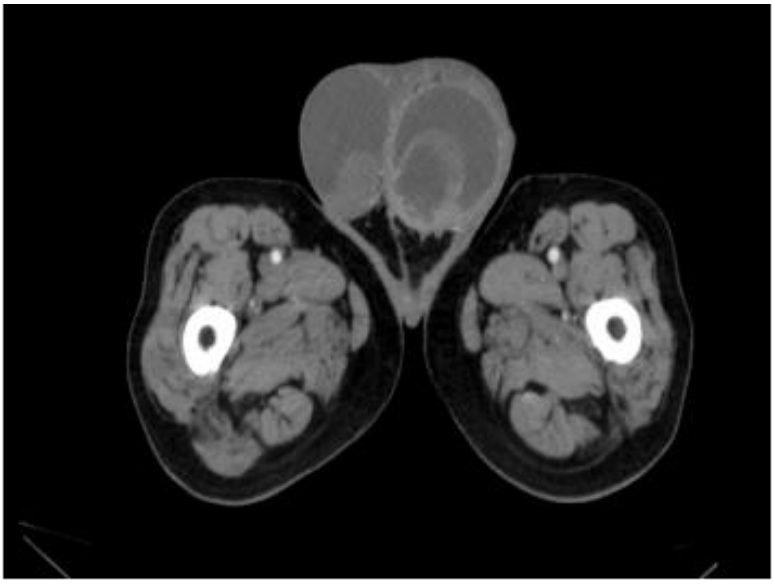

Figure 3. Pelvic CT with evidence of left scrotal abscess and unstructured ipsilateral testis.

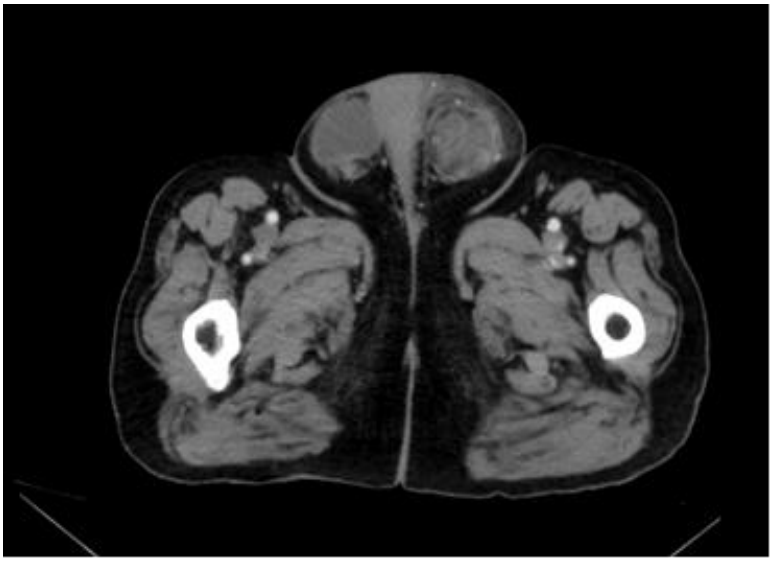

Figure 4. Pelvic CT with evidence of left scrotal abscess and unstructured ipsilateral testis.

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DISCUSSION

Epididymal-orchitis is one of the most common causes of acute scrotal pain in adult men, with approximately 600,000 cases diagnosed annually in the United States. It is a condition primarily driven by the retrograde ascent of pathogens to the epididymis, often progressing to involve the testis. While bacterial infections represent the overwhelming majority of cases, this report highlights the importance of considering rarer etiologies, such as parasitic infections, particularly in patients with atypical presentations or refractory symptoms [5].

The condition typically follows a bimodal age distribution, with *Neisseria gonorrhoeae* and *Chlamydia trachomatis* being the predominant causative agents in men aged 14–35 years. In contrast, older men are more frequently affected by infections caused by *Escherichia coli*, *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, and various *Staphylococcus* and *Streptococcus* species. In some cases, the infection may progress to severe complications, such as abscess formation, testicular infarction, or systemic sepsis, emphasizing the need for timely diagnosis and intervention[6].

This case stands out due to the unexpected involvement of *Entamoeba histolytica*, a protozoan parasite typically associated with intestinal infections and, in rare instances, extraintestinal manifestations such as hepatic abscesses. Scrotal involvement is exceedingly rare, with only one previous case described in the literature, making this presentation unique and significant. The detection of *E. histolytica* in histopathological examination, alongside the absence of stool or serological evidence of infection, underscores the complexity of this parasitic disease's diagnosis and pathophysiology.

Clinically, the patient presented with progressive scrotal pain and swelling, initially managed as bacterial orchiepididymitis. Despite standard antibiotic therapy, the condition escalated, leading to testicular ischemia and necessitating surgical intervention. The isolation of *Morganella morganii* from purulent material and subsequent histopathological identification of *E. histolytica* morphology revealed a dual infectious process that could have been overlooked without comprehensive diagnostic measures.

This case raises critical considerations about the management of epididymal-orchitis. While bacterial pathogens dominate, parasitic infections, though rare, should not be discounted, particularly in endemic regions or in patients with travel histories. Early imaging, thorough microbiological analysis, and a high index of suspicion for uncommon pathogens are essential to guide appropriate treatment.

The postoperative recovery in this patient was remarkable, with a swift resolution of systemic inflammatory markers and localized symptoms. He demonstrated full recovery at follow-up without recurrence, obviating the need for antiparasitic therapy. This outcome reflects the efficacy of timely surgical intervention and targeted antimicrobial therapy in managing such complex cases.

This case emphasizes the importance of considering rare parasitic infections like *E. histolytica* in patients with atypical presentations of epididymal-orchitis. It also highlights the value of a multidisciplinary approach involving urology, infectious disease specialists, and pathologists to ensure accurate diagnosis and effective management. By broadening our differential diagnosis in such scenarios, we can enhance patient outcomes and expand our understanding of the diverse etiologies underlying epididymal-orchitis.

CONCLUSION

In conclusion, this case presents a rare and striking example of how the clinical landscape of epididymal-orchitis can be complicated by unexpected and unusual pathogens, highlighting the essential need for clinicians to remain open to considering even the rarest of infections. While epididymal-orchitis is most commonly associated with bacterial pathogens, particularly *Escherichia coli* and sexually transmitted bacteria, the involvement of *Entamoeba histolytica* in a scrotal infection is both rare and extraordinary. This is only the second documented instance of such a finding, further underscoring the enigmatic nature of extraintestinal amebiasis and the challenges it poses to clinical diagnosis.

In this case, a combination of timely surgical intervention, meticulous microbiological workup, and insightful histopathological analysis led to the identification of dual infections: the first, a bacterial infection caused by *Morganella morganii*, and the second, a parasitic infection that could have easily been overlooked without the comprehensive approach taken. The patient's clinical course—marked by his complex medical history and the persistence of symptoms despite standard therapy—demonstrates how rare infections can complicate seemingly straightforward diagnoses, requiring a keen eye and a multifaceted approach.

This case is evidence of the power of collaboration across specialties, where urologists, infectious disease specialists, and pathologists joined forces to unravel the unusual pathology at play. The absence of stool and serological evidence of *E. histolytica* elsewhere in the body only adds to the perplexity, suggesting an isolated scrotal manifestation that challenges the current understanding of its pathophysiology. As global research continues to uncover new layers of complexity in parasitic infections, this case serves as a powerful reminder of how much there is still to learn about the ways in which pathogens can present themselves.

Ultimately, the patient's remarkable recovery with no recurrence over five months—and without the need for further antiparasitic treatment—highlights the profound impact of precise and early intervention. It is a rare success story in the face of a truly unique clinical challenge, offering new perspectives on the diagnosis and management of extraintestinal amebiasis in urological settings.

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IMAGES

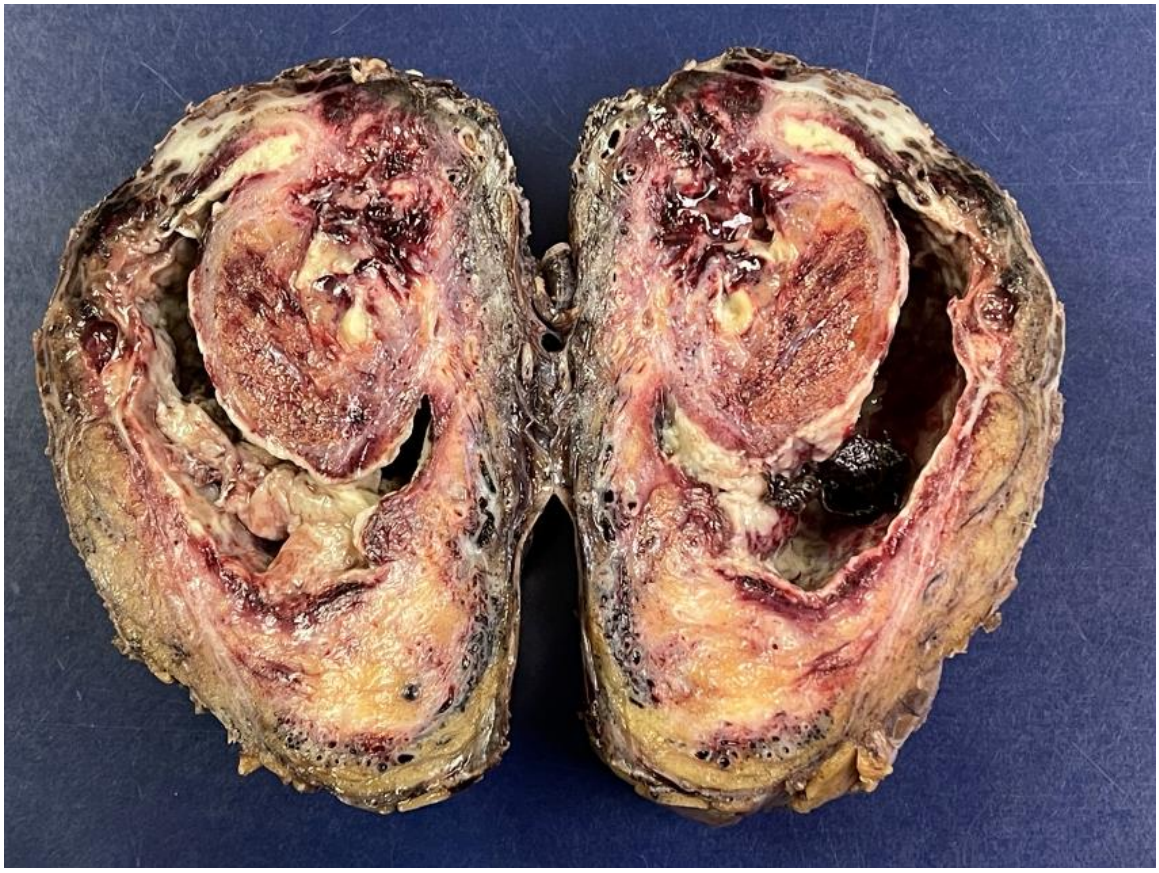

Image 1. Macroscopic appearance of the testis, characterized by significant distortion of the parenchyma and tunics due to necrosis, hemorrhage, and the formation of cavitary abscesses.

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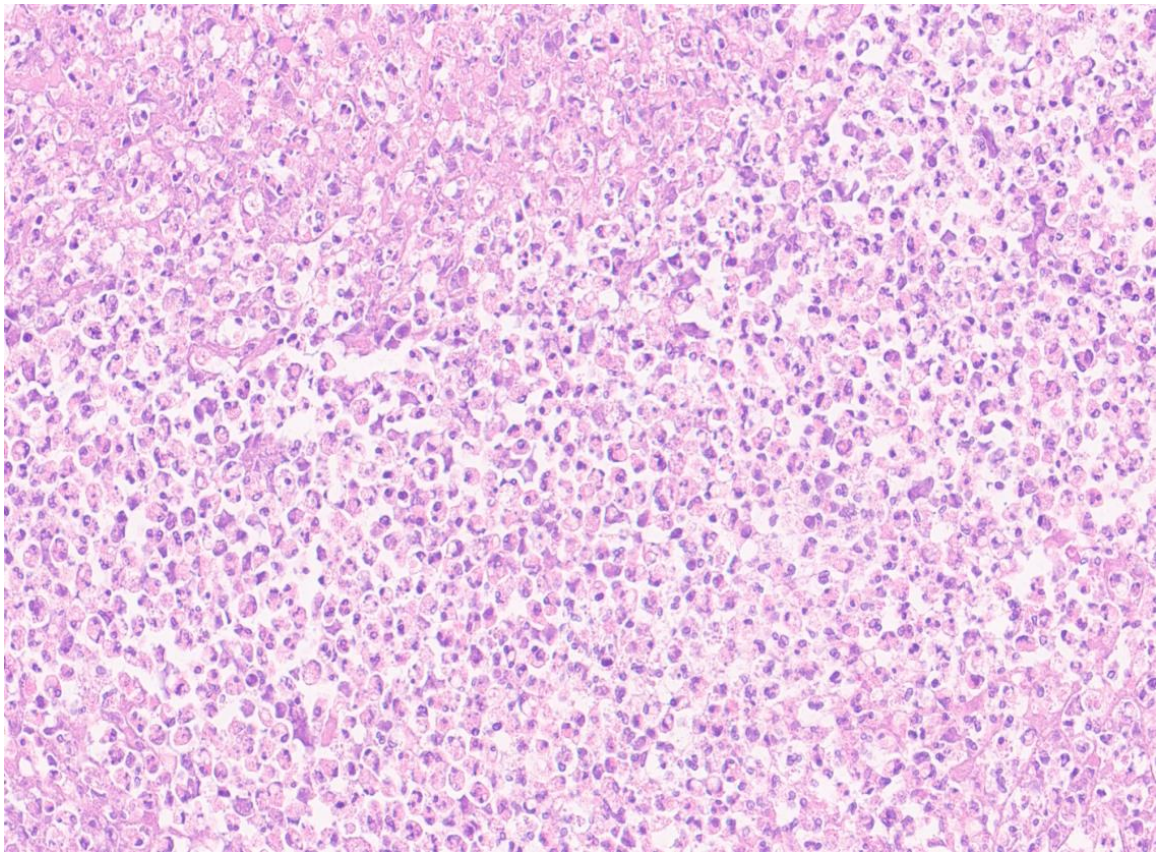

Image 2. Extensive inflammatory reaction with abundant neutrophils and necrosis.

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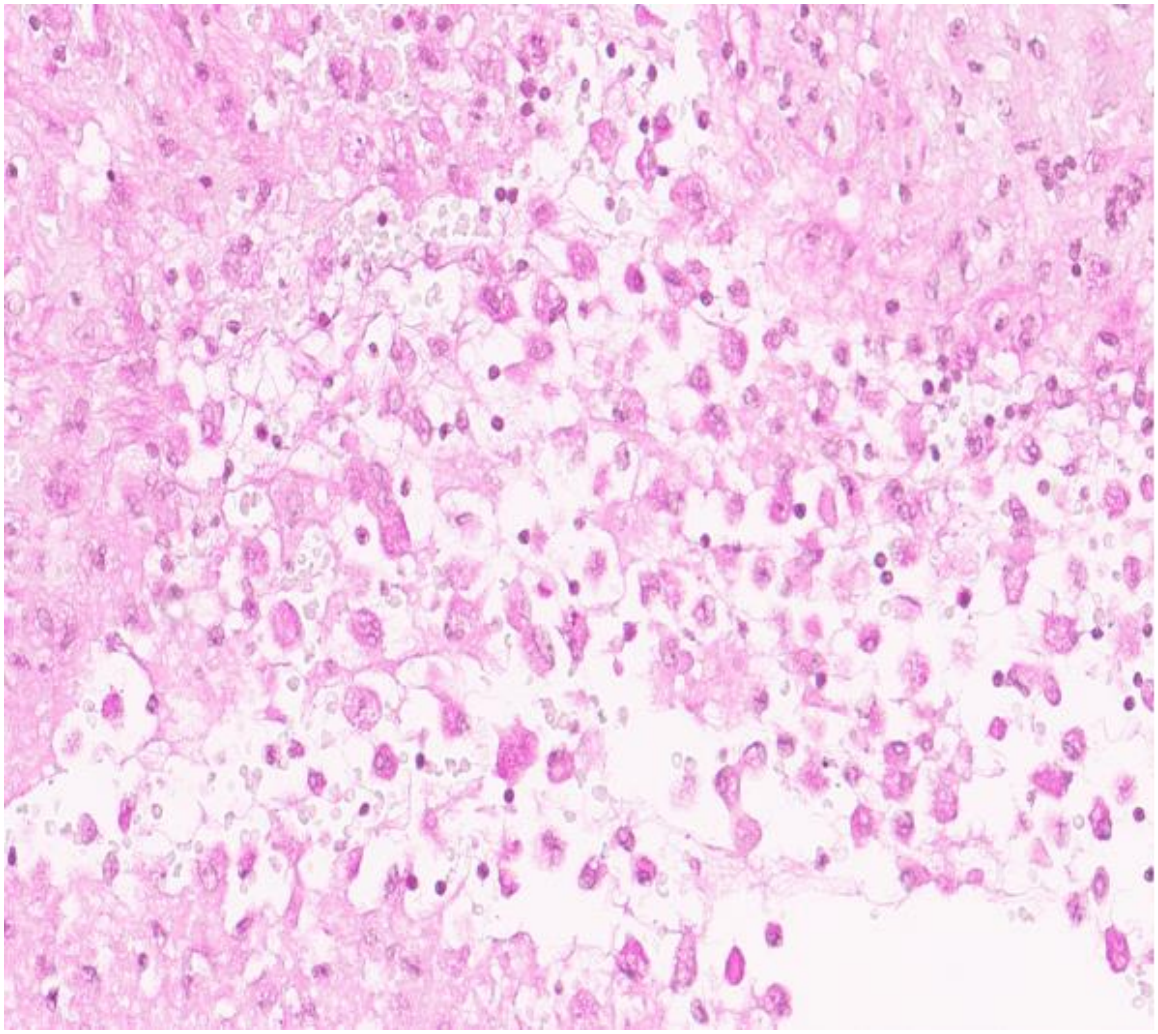

Image 3. Some amoebas are identified amidst the necrosis and inflammation.

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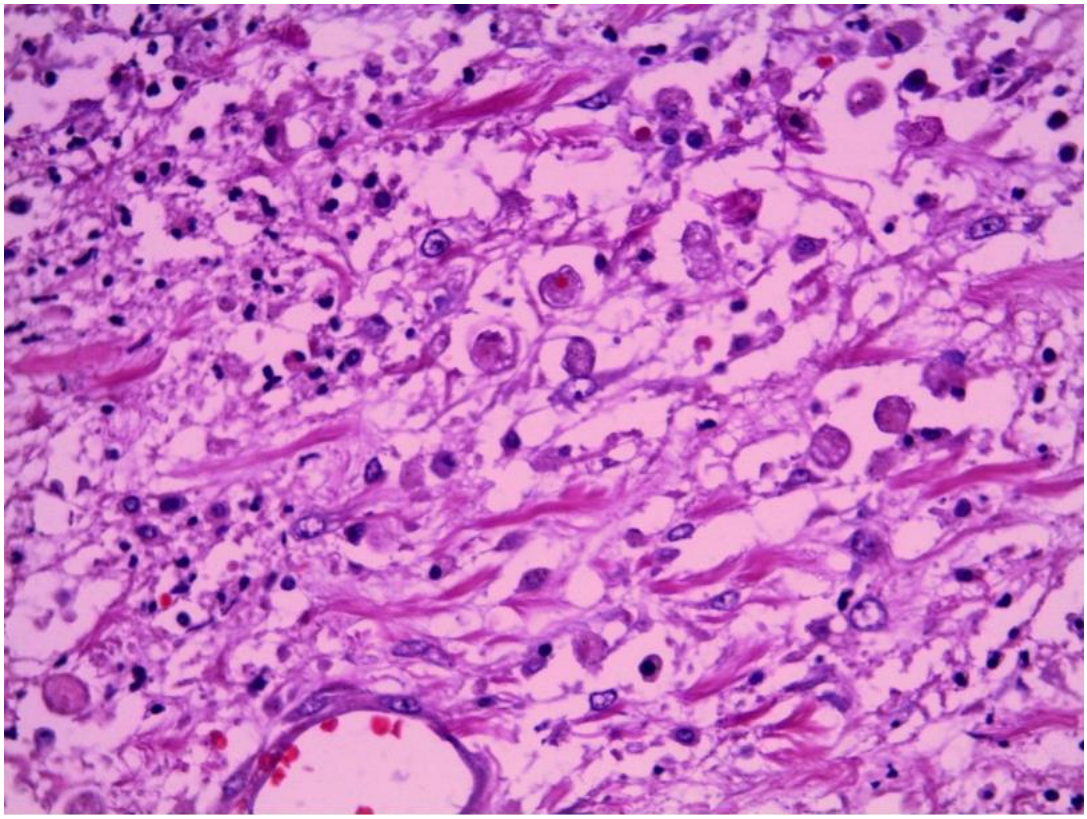

Image4. Numerous amoebas with phagocytized erythrocytes are identified.

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