

Case Report

Cutaneous amebiasis: diagnostic challenges in a rare genital presentation

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ABSTRACT

Cutaneous amebiasis (CA) is a rare, often misdiagnosed manifestation of *Entamoeba histolytica* infection, typically associated with gastrointestinal disease. Its non-specific presentation mimics malignancies or ulcerative conditions, posing diagnostic challenges, particularly in endemic areas with poor sanitation. A 35-year-old immunocompetent female presented with a two-month history of a non-healing ulcer (4×3 cm) on the labia majora and minora, initially misdiagnosed as genital herpes. Despite treatment with valacyclovir, corticosteroids, and empirical antibiotics (doxycycline, nadifloxacin, and azithromycin), the ulcer persisted. Examination revealed a painful ulcer with undermined margins, necrotic slough, and erythema, without systemic symptoms. Laboratory tests (negative ANA, HIV, and Tzanck smear) ruled out autoimmune and viral causes. Histopathological biopsy confirmed CA, showing *E. histolytica* trophozoites, hyperplastic squamous epithelium, and chronic inflammation. Oral metronidazole (400 mg thrice daily) and topical metronidazole achieved significant healing within two weeks and complete resolution by one month. The case highlights the diagnostic complexity of cutaneous amoebiasis, as its genital presentation resembles herpes or malignancy. Histopathology was critical for diagnosis, especially without intestinal involvement, suggesting possible nosocomial or hygiene-related transmission. Metronidazole's efficacy aligns with standard protocols, but CA's rarity delays recognition. Cutaneous amoebiasis requires heightened clinician awareness to avoid misdiagnosis. Histopathological confirmation and prompt metronidazole therapy ensure excellent outcomes. Enhanced vigilance and public health measures are essential in endemic regions to manage this rare, treatable condition effectively.

Keywords: Cutaneous amoebiasis, *Entamoeba histolytica*, Genital ulcer, Metronidazole, Diagnostic biopsy, Tissue biopsy

INTRODUCTION

Cutaneous amoebiasis is a rare extraintestinal manifestation of infection caused by *Entamoeba histolytica*, a protozoan parasite responsible for amoebiasis, which affects approximately 50 million people worldwide, primarily in tropical and subtropical regions with poor sanitation.¹ This condition poses a significant public health challenge, with an estimated 100,000 annual deaths, mostly in developing countries.^{1,2} While intestinal amoebiasis and amoebic liver abscess are well-documented, cutaneous involvement is exceptionally

uncommon, accounting for less than 1% of cases.^{3,4} Cutaneous amoebiasis typically presents as painful, non-healing ulcers that mimic other dermatological conditions, such as squamous cell carcinoma, genital herpes, syphilitic chancres, or autoimmune disorders, making accurate diagnosis challenging.⁶

The rarity of cutaneous amoebiasis, combined with its nonspecific clinical presentation, often leads to delayed or incorrect diagnoses, potentially resulting in severe tissue destruction or systemic complications.^{5,6}

Cutaneous amoebiasis may occur as a primary infection through direct inoculation of trophozoites into the skin via trauma, surgical wounds, or contaminated medical instruments, or as a secondary condition due to contiguous spread from intestinal or hepatic foci.^{3,9} The genital and perianal regions are common sites for secondary cutaneous amoebiasis because of their proximity to the gastrointestinal tract, though isolated cutaneous lesions without systemic symptoms are rare.⁷ First described by Nasse in 1892 after hepatic abscess drainage, Cutaneous amoebiasis remains diagnostically challenging due to its rarity and resemblance to malignancies or chronic ulcerative conditions.^{5,6} Risk factors include inadequate hygiene, crowded living conditions, and potential nosocomial transmission in healthcare settings with poor sterilization practices.^{7,10} Immunocompromised states, such as HIV infection, diabetes, or chronic corticosteroid use, increase susceptibility, though cases in immunocompetent individuals, as in this report, are noteworthy.¹⁰ The pathophysiology involves *E. histolytica* trophozoites invading the skin, facilitated by virulence factors such as adhesion molecules, proteases, and contact-dependent cytolysis, leading to tissue necrosis and ulceration.¹¹

Early recognition of cutaneous amoebiasis is critical to prevent extensive anatomical damage and ensure healing without functional sequelae.⁷ Awareness among clinicians, particularly in endemic areas or among patients with underlying gastrointestinal amoebiasis, is essential. Advances in diagnostic techniques, such as polymerase chain reaction (PCR) for *E. histolytica* DNA, have improved detection, but histopathological examination remains the gold standard.¹³

Public health strategies, including improved sanitation and sterilization protocols, are vital to reduce transmission.¹⁰ This case report describes a rare presentation of cutaneous amoebiasis in a 35-year-old female with a non-healing genital ulcer, emphasizing the pivotal role of biopsy in diagnosis, the efficacy of metronidazole in treatment, and the need for heightened clinical suspicion to address this rare entity effectively.

CASE REPORT

A 35-year-old married female presented to the dermatology clinic in October 2023 with a two-month history of painful, non-healing ulcer on her right labia majora and minora. Referred by her gynecologist for suspected genital herpes, the patient reported that the lesion began as a small, painful, erythematous papule, which progressively enlarged and ulcerated over two months, reaching a size of approximately 4×3 cm. The papule eventually ruptured, producing blood-tinged purulent discharge. On clinical examination, the ulcer had thickened, undermined margins, granulomatous border, surrounding erythema, and a floor covered with necrotic slough (Figure 1).

The patient experienced localized pain, tenderness, and itching but reported no systemic symptoms, such as fever, weight loss, or gastrointestinal complaints. Bilateral inguinal lymph nodes were not enlarged, and no other cutaneous lesions were observed.



Figure 1: Pre-treatment lesion located on right labia majora and minora.

The patient's medical history was unremarkable, with no immunosuppressive conditions or prior surgeries. She had been treated by her gynecologist with oral valacyclovir 500 mg three times daily for one-week, oral methylprednisolone 8 mg three times daily, and an oral nonsteroidal anti-inflammatory drug (paracetamol 325 mg with diclofenac sodium 50 mg), with no clinical improvement. Upon presentation to the dermatology clinic, empirical treatment was initiated with oral doxycycline 100 mg twice daily and topical nadifloxacin 1% cream while awaiting laboratory and biopsy results. A single dose of oral azithromycin 1 gm was administered to cover potential bacterial co-infections.

The patient underwent a biopsy of the affected area under local anesthesia, performed by a gynecologist, and the site was closed with 3-0 absorbable polyglactin sutures. Laboratory investigations revealed a negative ANA blot, ruling out autoimmune diseases such as systemic lupus erythematosus; serum IgE levels were within normal limits, excluding allergic or parasitic hypersensitivity; tests for desmoglein 1 and 3 (DSG1, DSG3) autoantibodies were negative, thereby eliminating pemphigus; pus culture showed no bacterial or fungal growth; Tzanck smear was negative for multinucleated giant cells, which ruled out herpes simplex virus; serological assays for HSV-1 and HSV-2 (IgG and IgM) were also negative; and urine routine and microscopy indicated the presence of leukocytes, suggesting localized inflammation possibly associated with the ulcer. The HIV antibody screen was negative.

Histopathological examination of the biopsy revealed hyperplastic squamous epithelium with focal ulceration, granulation tissue, numerous *Entamoeba histolytica* trophozoites, and active chronic inflammation. No granulomas, Donovan bodies, dysplasia, or malignancy

were identified, confirming the diagnosis of cutaneous amoebiasis. Based on these findings, the patient was prescribed oral metronidazole 400 mg three times daily for 10 days and topical metronidazole 1% cream twice daily. At the two-week follow-up, the ulcer showed significant improvement, with a reduced size, minimal induration, and no discharge. Topical metronidazole was continued for an additional two weeks. At the one-month follow-up, the ulcer had completely resolved, with no functional sequelae or residual scarring (Figure 2). The patient was monitored for an additional 10 days, during which no recurrence was observed. Follow-up counselling emphasized hygiene practices, regular gynecological evaluations, and monitoring for subclinical intestinal amoebiasis to prevent recurrence.



Figure 2: Post treatment appearance of the lesion with significant healing.

DISCUSSION

Cutaneous amoebiasis is an exceptionally rare manifestation of *Entamoeba histolytica* infection, with fewer than 100 documented cases in the literature.³ This case of a 35-year-old female with a non-healing genital ulcer highlights the diagnostic complexity of cutaneous amoebiasis, as its clinical features overlap with more common conditions, including genital herpes, Lymphogranuloma venereum, squamous cell carcinoma, chancroid, and autoimmune blistering diseases.⁴ The ulcer's characteristics—undermined margins, necrotic slough, and surrounding erythema—are typical of cutaneous amoebiasis but nonspecific, necessitating histopathological confirmation.⁷

The initial misdiagnosis as genital herpes, treated with valacyclovir and corticosteroids, reflects a common diagnostic pitfall. Corticosteroids may exacerbate amoebic infections by suppressing local immune responses, potentially worsening tissue destruction.⁹ A case reported by En et al described a perianal cutaneous amoebiasis lesion mistaken for a malignant mass, underscoring the need for biopsy to identify *E. histolytica* trophozoites.⁶ In this case, histopathology revealing *E. histolytica* trophozoites was pivotal, aligning with Morán et al's view

that biopsy remains the gold standard for cutaneous amoebiasis diagnosis.⁷

The genital location of the ulcer suggests secondary cutaneous amoebiasis, but no associated intestinal infection was identified, likely resulting from contiguous spread from asymptomatic intestinal reservoir or direct inoculation via microabrasions.³ Up to 90% of *E. histolytica* infections are asymptomatic which may explain the absence of gastrointestinal symptoms in this patient.⁷ The parasite's virulence factors, including adhesion molecules, toxins, contact-dependent cytolysis, protease, and phagocytic activity enable extensive tissue invasion, as evidenced by the ulceration in this case.¹¹ Potential sources of infection include nosocomial transmission during gynecological examinations or hygiene-related microabrasions, though sexual transmission, while rare, is a possibility.¹² The patient's lack of typical risk factors, such as immunosuppression makes this case unusual, as cutaneous amoebiasis is more commonly reported in immunocompromised individuals.⁴

The negative HIV screen, normal IgE levels, and negative autoimmune markers complicated the diagnostic process, as cutaneous amoebiasis is often associated with immunosuppression.⁷ The presence of leukocytes in urine may indicate localized inflammation secondary to the ulcer. Additional tests, such as stool microscopy for *E. histolytica* cysts or anti-amoebic antibody ELISA, could have clarified the infection's source but were not critical given the biopsy results.¹³

Treatment with oral metronidazole (400 mg three times daily for 10 days) and topical metronidazole achieved complete resolution within one month, consistent with established protocols.^{7,10} Metronidazole's efficacy in cutaneous amoebiasis is well-documented, with rapid healing and low recurrence rates when initiated promptly.^{4,10} The empirical use of doxycycline and azithromycin addressed potential bacterial co-infections, which are common in ulcerative lesions but ineffective against *E. histolytica*.⁷ Long-term follow-up is recommended to monitor for subclinical intestinal amoebiasis, which may persist asymptomatically.¹² The patient's immunocompetent status and absence of systemic symptoms suggest a localized infection, but periodic screening for intestinal carriage is prudent, especially in endemic areas.⁷

Amoebiasis remains a global public health challenge, particularly in developing countries with inadequate sanitation.¹ The rarity of cutaneous amoebiasis underscores the need for heightened clinician awareness among clinicians to reduce diagnostic delays. Public health strategies, including improved sanitation, access to clean water, and sterilization of medical equipment, are critical to reducing amoebiasis transmission.¹⁰ Advances in diagnostics, such as real-time PCR for *E. histolytica* DNA in tissue samples, offer promise for faster and less invasive diagnosis, potentially reducing reliance on biopsy.^{7,13}

Education campaigns targeting healthcare providers and at-risk populations can enhance early recognition, while addressing socioeconomic factors, such as poverty and limited healthcare access, is essential to mitigate the burden of amoebiasis.¹⁰

CONCLUSION

This case of cutaneous amoebiasis presenting as a non-healing genital ulcer illustrates the diagnostic and therapeutic challenges of this rare condition. Its clinical similarity to common ulcerative diseases, such as genital herpes or malignancy, necessitates a high index of suspicion and histopathological confirmation. Metronidazole therapy is highly effective, as demonstrated by the patient's complete recovery within one month. Clinicians must consider cutaneous amoebiasis in the differential diagnosis of non-healing ulcers, especially when standard treatments fail even in patients with access to better sanitation. Increased awareness, early biopsy, and robust public health measures are essential to address the global burden of amoebiasis and manage its uncommon extraintestinal manifestations effectively. Future research should focus on improving diagnostic tools, such as non-invasive molecular assays, and implementing preventive strategies to reduce the incidence of amoebiasis in endemic regions.

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