

Case Report

Conventional cervical smears disclose histoplasmosis: a case report

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ABSTRACT

Histoplasmosis is an uncommon fungal infection caused by *Histoplasma capsulatum*, often presenting as a pulmonary disease in endemic regions. Extrapulmonary manifestations, particularly involving the genitourinary tract, are exceedingly rare and pose diagnostic challenges. This case report discusses a 36-year-old female who presented with a one-year history of foul-smelling white vaginal discharge, abdominal discomfort, and lower back pain. Cytological analysis of a pap smear revealed extracellular yeast-like cells consistent with *histoplasma capsulatum*. The smear was classified as negative for intraepithelial lesion or malignancy (NILM). Routine blood tests and organ function tests were normal, and further investigations were recommended to exclude systemic histoplasmosis, including serological detection of anti-H and anti-M antibodies using histoplasmin. The rarity of this presentation emphasizes the importance of considering fungal infections in the differential diagnosis of chronic gynecological symptoms, particularly in regions where histoplasmosis is endemic. Pap smear cytology, a cost-effective and accessible diagnostic tool, was pivotal in identifying the pathogen. Differential diagnoses such as candidiasis and cryptococcosis were ruled out based on the characteristic morphological features of *histoplasma capsulatum*. Comprehensive management, including systemic screening and potential antifungal therapy, is essential to prevent disease progression. This case underscores the need for heightened clinical awareness and a multidisciplinary approach to diagnose and manage rare fungal infections in gynecological practice. Additionally, it highlights the diagnostic utility of cytological methods in identifying atypical pathogens beyond routine cervical cancer screening.

Keywords: *Histoplasma capsulatum*, Fungal infection, PAP smear, Vaginal discharge, Cytology, Systemic disease screening

INTRODUCTION

Histoplasmosis is a fungal infection caused by *Histoplasma capsulatum*, a dimorphic fungus endemic to regions such as the Ohio and Mississippi River valleys in North America, Central and South America, Africa, and Southeast Asia. It is often acquired through inhalation of fungal spores found in soil contaminated with bird or bat droppings, making it a common occupational hazard for

farmers, construction workers, and individuals engaging in cave exploration.¹ While histoplasmosis primarily affects the lungs, disseminated forms of the disease can involve multiple organ systems, including the central nervous system, gastrointestinal tract, and rarely, the genitourinary system.² Genitourinary histoplasmosis is exceedingly rare, with only a few documented cases worldwide. Such manifestations are often misdiagnosed as bacterial infections, malignancies, or other fungal conditions due to

nonspecific clinical presentations. Chronic gynecological symptoms such as persistent vaginal discharge, pelvic pain, or abnormal bleeding are typically attributed to bacterial, viral, or protozoal pathogens, with fungal etiologies rarely considered.³ This diagnostic challenge necessitates a comprehensive and systematic approach, particularly in regions where histoplasmosis is endemic.

Cytological methods, including the use of pap smear, have proven instrumental in detecting rare infections like histoplasmosis. While originally designed for cervical cancer screening, Pap smear cytology is increasingly recognized for its role in identifying atypical pathogens, including fungal organisms.

The morphological characteristics of *Histoplasma capsulatum* on cytology, such as the presence of yeast-like cells, provide critical clues for diagnosis. The ability to differentiate this from more common pathogens such as *Candida* species or *Cryptococcus* underscores the utility of cytology in clinical practice.⁴

This report describes a rare case of genitourinary histoplasmosis diagnosed through cytological analysis in a 36-year-old female presenting with chronic vaginal discharge.

The case underscores the importance of considering fungal infections in the differential diagnosis of persistent gynecological symptoms, particularly in endemic areas, and highlights the need for systemic evaluation and interdisciplinary collaboration for effective management. The diagnostic process, treatment considerations, and broader implications for clinical practice are discussed in detail.

CASE REPORT

A 36-year-old female presented to the gynaecology clinic with a one-year history of persistent foul-smelling white vaginal discharge, accompanied by abdominal pain and lower back discomfort. The symptoms were progressive and unresponsive to prior empirical treatments. She reported regular menstrual cycles lasting 4-5 days every 28 days, with no associated abnormalities.

Her past medical history was non-contributory, and there was no significant family history of gynecological or systemic diseases. Social history was unremarkable, with no history of substance use or high-risk behaviours.

Initial investigations

The patient underwent a comprehensive physical examination, which revealed a moderately inflamed cervix with excessive discharge on speculum examination. No external genital lesions were noted.

Routine laboratory tests, including complete blood count (CBC), liver function tests (LFT), and kidney function

tests (KFT), were within normal ranges. A conventional Pap smear was performed, and cytological analysis revealed extracellular yeast-like cells morphologically consistent with *Histoplasma capsulatum*. The smear was classified as negative for intraepithelial lesion or malignancy (NILM).

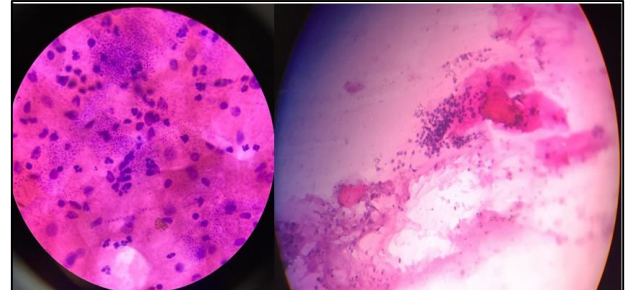


Figure 1: Pap smear showing extracellular yeast-like cells of *Histoplasma capsulatum*.

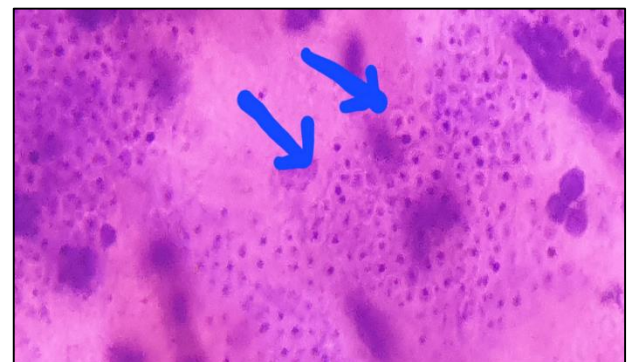


Figure 2: Pap smear showing extracellular yeast like cells of *Histoplasma capsulatum*.

Biochemical markers

To further evaluate the possibility of systemic involvement, serological tests were recommended. Specific tests for anti-H and anti-M antibodies using histoplasmin were advised to confirm exposure to *Histoplasma capsulatum*.

Additionally, inflammatory markers, including erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP), were measured to assess systemic inflammation. Both markers were within normal limits, reducing the likelihood of significant dissemination at the time of evaluation.

Diagnostic criteria fulfilments

The diagnosis of genitourinary histoplasmosis was based on the following criteria. Clinical presentation of chronic vaginal discharge and abdominal discomfort, unresponsive to conventional therapy. Cytological findings on Pap smear indicating extracellular yeast-like cells morphologically consistent with *Histoplasma capsulatum*.

Exclusion of other common fungal infections, such as candidiasis and cryptococcosis, based on morphology and absence of pseudo hyphae or encapsulated yeast forms. Supporting serological evidence of *Histoplasma* exposure through positive antibody detection.

Treatment

Given the localized nature of the infection and the absence of systemic involvement, the patient was started on oral itraconazole at a dose of 200 mg daily for 6 weeks. The treatment plan was tailored to target localized fungal proliferation while minimizing adverse effects. The patient was counselled on the importance of adherence to

antifungal therapy and the need for follow-up to monitor treatment response.

Outcome

At the six-week follow-up, the patient reported significant improvement in symptoms, with resolution of vaginal discharge and abdominal discomfort. A repeat Pap smear showed no evidence of fungal elements, and inflammatory markers remained within normal limits.

The patient was advised to remain vigilant for any recurrence of symptoms and to seek immediate medical attention if needed. Long-term follow-up was planned to monitor for potential recurrence or systemic involvement.

Table 1: Laboratory investigations of the patient.

Test procedure	Result	Reference range	High/normal/low
CBP	HB:10 gm% TLC:11000/cu mm	11.5 to 13.5 gm% 4000 to 11000 / cu mm	LOW WNL
CUE	WNL		WNL

DISCUSSION

Histoplasmosis, caused by *Histoplasma capsulatum*, remains a diagnostic challenge, particularly when presenting with extrapulmonary manifestations. The rarity of genitourinary involvement, as highlighted in this case, underscores the need for heightened clinical suspicion, especially in patients with persistent symptoms unresponsive to conventional therapy. The clinical presentation in this case, characterized by chronic foul-smelling vaginal discharge and abdominal discomfort, mimicked common bacterial infections, delaying the consideration of fungal etiologies.^{5,6}

Cytological analysis via Pap smear proved invaluable in identifying the pathogen. This simple and cost-effective tool, traditionally utilized for cervical cancer screening, has demonstrated its versatility in diagnosing rare infectious agents. The detection of extracellular yeast-like cells on cytology is a hallmark of *Histoplasma capsulatum*, allowing differentiation from more common pathogens such as *Candida* and *Cryptococcus*.⁷ In regions where advanced diagnostic tools are unavailable, Pap smear cytology can play a pivotal role in identifying unusual infections.

The pathogenesis of histoplasmosis involves inhalation of fungal spores, which primarily affects the lungs. Dissemination occurs in immunocompromised individuals, but this case highlights that immunocompetent individuals are not immune to extrapulmonary involvement. The absence of systemic dissemination in this patient, as evidenced by normal inflammatory markers and limited symptoms, emphasizes the localized nature of the infection.^{8,9}

Treatment with oral itraconazole was effective, reflecting the efficacy of antifungal agents in managing localized histoplasmosis. While amphotericin B is the treatment of choice for disseminated forms, itraconazole is preferred for localized infections due to its favorable safety profile and ease of administration. This case underscores the importance of early diagnosis and appropriate antifungal therapy to prevent complications.^{10,11}

This case reinforces the necessity of considering fungal infections in the differential diagnosis of chronic gynecological symptoms. Clinicians must remain vigilant and utilize accessible diagnostic tools such as cytology to identify rare pathogens. Interdisciplinary collaboration and systemic evaluation are crucial in ensuring comprehensive care for affected patients.

Clinical message

This case underscores the importance of including fungal infections in the differential diagnosis of persistent gynecological symptoms. The use of Pap smear cytology in detecting rare pathogens like *Histoplasma capsulatum* demonstrates its value beyond routine cervical cancer screening. Clinicians should maintain a high index of suspicion and consider systemic disease screening in patients presenting with chronic or atypical symptoms.

CONCLUSION

Histoplasmosis, though primarily a pulmonary disease, can present with rare extrapulmonary manifestations, including genitourinary involvement, as highlighted in this case. This report emphasizes the importance of a thorough diagnostic workup in patients with persistent and

unexplained gynecological symptoms, particularly in endemic areas. Cytological analysis via Pap smear proved pivotal in identifying *Histoplasma capsulatum*, reinforcing its utility as a diagnostic tool beyond its conventional use in cervical cancer screening. Early identification and appropriate management, including antifungal therapy tailored to the infection's severity, play a crucial role in ensuring favorable outcomes.

The case further underscores the need for heightened clinical awareness of fungal infections and their atypical presentations, even in immunocompetent individuals. Comprehensive systemic evaluation, including serological testing and follow-up, is essential to exclude dissemination and to monitor treatment efficacy. Future studies are warranted to expand the understanding of histoplasmosis's clinical spectrum, particularly its rare manifestations, to aid clinicians in improving diagnostic accuracy and patient care. This case serves as a reminder of the value of interdisciplinary collaboration in managing complex clinical scenarios.

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