ORIGINAL RESEARCH PAPER

Clinical Microbiology

DRUG-RESISTANT CANDIDA ALBICANS IN A YOUNG FEMALE WITH PELVIC INFLAMMATORY DISEASE.

KEY WORDS: Candida albicans, drug resistance, pelvic inflammatory disease, antifungal therapy, fluconazole resistance

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ABSTRACT

We present a case of a 24-year-old female diagnosed with pelvic inflammatory disease (PID) complicated by drug-resistant Candida albicans infection. Despite initial treatment with fluconazole for suspected candidiasis and standard antibiotics for PID, the patient exhibited persistent symptoms, prompting further investigation. Microbiological testing confirmed fluconazole-resistant Candida albicans, necessitating alternative antifungal therapy. This case highlights the challenges of managing drug-resistant fungal infections in the context of PID, emphasizing the need for antifungal susceptibility testing and tailored treatment strategies to address emerging resistance.

INTRODUCTION

Pelvic inflammatory disease (PID) is a polymicrobial infection of the upper female genital tract, typically caused by sexually transmitted pathogens such as Chlamydia trachomatis or Neisseria gonorrhoeae. Opportunistic infections, including those caused by Candida albicans, may complicate PID, particularly in the setting of antibiotic-induced dysbiosis. The rise of antifungal-resistant Candida strains poses significant therapeutic challenges. We report a rare case of drug-resistant Candida albicans in a young female with PID, underscoring diagnostic and management complexities.

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Case Presentation

A 24-year-old female presented to the gynecology outpatient department with a 10-day history of lower abdominal pain, dyspareunia, and thick, white vaginal discharge. She reported irregular menstrual cycles and a history of unprotected sexual intercourse. She denied fever, systemic symptoms, or recent intrauterine procedures. Her medical history was unremarkable, with no known comorbidities or immunosuppression.

Physical examination revealed tenderness in the lower abdomen and adnexal regions. Speculum examination showed cervical erythema and mucopurulent discharge. Initial laboratory tests included a negative urine pregnancy test and elevated C-reactive protein (CRP) levels (45 mg/L; normal <10 mg/L). Vaginal and cervical swabs were collected for microscopy, culture, and nucleic acid amplification tests (NAAT) for Chlamydia trachomatis and Neisseria gonorrhoeae.

Empiric treatment for PID was initiated per CDC guidelines: ceftriaxone 500 mg intramuscularly (single dose) and doxycycline 100 mg orally twice daily for 14 days. Concurrently, fluconazole 150 mg (single oral dose) was prescribed for suspected vulvovaginal candidiasis based on the discharge characteristics.

INVESTIGATIONS

NAAT confirmed Chlamydia trachomatis infection, supporting the PID diagnosis. Vaginal swab culture grew Candida albicans, but the patient reported no improvement in vaginal discharge or pelvic pain after 7 days of treatment. Repeat cultures confirmed persistent Candida albicans.

Antifungal Susceptibility Testing (CLSI broth microdilution):

- Fluconazole: MIC 32 µg/mL (Resistant)
- Itraconazole: MIC 2 µg/mL (Resistant)
- Caspofungin: MIC 0.25 µg/mL (Susceptible)

Amphotericin B: MIC 0.5 µg/mL (Susceptible) Pelvic ultrasound showed no evidence of tubo-ovarian abscess or structural abnormalities. Molecular testing for resistance genes (ERG11, CDR1/CDR2) was not performed due to resource limitations.

Treatment

Fluconazole was discontinued. The patient was started on intravenous caspofungin (70 mg loading dose, then 50 mg daily) for 7 days. Doxycycline was continued to complete the 14-day PID course. The patient was counseled on safe sexual practices and advised to avoid unnecessary antifungal or antibiotic use to prevent further resistance.

Outcome and Follow-Up

By day 5 of caspofungin therapy, the patient reported significant improvement in vaginal discharge and pelvic pain. Repeat vaginal culture at 2 weeks was negative for Candida albicans. At 4-week follow-up, she remained asymptomatic with normal CRP (8 mg/L). She was advised regular gynecological follow-up for monitoring of potential complications such as infertility or chronic pelvic pain.

DISCUSSION

C. albicans is an uncommon cause of PID, but when resistant strains are involved, management becomes more complex. In this case, prolonged antibiotic use likely led to dysbiosis and opportunistic fungal overgrowth. The resistance to fluconazole and itraconazole could be attributed to mechanisms like overexpression of efflux pumps (CDR1/CDR2) or mutations in ERG11, though genetic confirmation was not feasible.

Fluconazole resistance in clinical Candida isolates is increasingly reported globally, with regional rates ranging from 10–15%. Risk factors include prior azole exposure, recurrent infections, and broad-spectrum antibiotic use.

Key management considerations:

1. Antifungal Susceptibility Testing: Crucial in non - responders to standard azole therapy.
2. Use of Echinocandins: Effective against azole-resistant strains, though expensive and parenteral.
3. Antibiotic Stewardship: To limit fungal overgrowth and resistance emergence.
4. Prevention: Education on STI protection and restoration of normal vaginal flora may reduce recurrence risk.

This case demonstrates the importance of a multidisciplinary, microbiology-informed approach to managing complex PID cases. Though limitations existed (no molecular resistance profile, short follow-up), therapeutic success with caspofungin is notable.

CONCLUSION

Drug-resistant Candida albicans complicating PID is rare but represents an emerging challenge. This case emphasizes the value of targeted microbiological diagnostics, antifungal susceptibility testing, and individualized therapy in achieving favorable outcomes.

Declarations

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Patient Consent: Obtained. Identifying details have been omitted to maintain anonymity.

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