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CASE REPORT

Isolation of burkholderia cepacia from endometrial fluid: A rare case report

[1]Dr. Rituja Prakash, [2]Dr. Mukesh Bansal, [3]Dr. Kamlesh Kumar B Patel

[1]Associate Professor, Department of Microbiology, SAIMS Medical College and Postgraduate Institute, Indore, Madhya Pradesh, India
[2]Assistant Professor, Department of Microbiology, LNCT Medical College, Indore, Madhya Pradesh, India
[3]Associate Professor and Head of Department, Department of Microbiology, SAIMS Medical College and Postgraduate Institute, Indore, Madhya Pradesh, India

Corresponding Author
Dr. Kamlesh Kumar B Patel
Associate Professor and Head of Department, Department of Microbiology, SAIMS Medical College and Postgraduate Institute, Indore, Madhya Pradesh, India
Email: Drkamlesh24x7@gmail.com

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ABSTRACT

Background: Burkholderia cepacia complex (Bcc) is a group of gram-negative, non-fermentative bacteria primarily recognized as opportunistic pathogens, particularly in immunocompromised patients and those with cystic fibrosis. While commonly associated with respiratory infections, B. cepacia has increasingly been identified in diverse anatomical sites, including the female reproductive tract, albeit rarely. **Case Report:** This report describes an unusual case of B. cepacia isolated from the endometrial fluid of a 58-year-old postmenopausal woman presenting with abnormal vaginal bleeding. Initial assessments, including imaging and laboratory tests, suggested possible pyometra or cervical stenosis, prompting diagnostic hysteroscopy and microbiological analysis. The organism was cultured on selective media and characterized biochemically, confirming its identity and demonstrating resistance to multiple antibiotics, while remaining susceptible to meropenem and trimethoprim-sulfamethoxazole. **Discussion:** This case underscores the necessity for vigilant microbiological investigation when atypical organisms are suspected, particularly in the absence of overt immunocompromising conditions. Given the pathogen's potential to cause significant morbidity, timely identification and appropriate antibiotic therapy are crucial to managing such infections effectively. **Conclusion:** This report emphasizes the importance of recognizing B. cepacia as a possible pathogen in gynecological contexts and the need for heightened clinical awareness.

Keywords: Endometrium, Immunocompromised, NLF, Pyometra

INTRODUCTION

Burkholderia cepacia complex (Bcc) is a group of gram-negative, non-lactose fermentative bacteria (NLF) that includes multiple closely related species. First identified as a plant pathogen, As per **Mahenthiralingam E et al, 2005** it has emerged as an opportunistic pathogen in humans, particularly in immunocompromised individuals and patients with chronic granulomatous disease or cystic fibrosis. While respiratory infections are the most common form of disease caused by B. cepacia, According to **Drevinek P and Mahenthiralingam E, 2010** it has been increasingly isolated from other anatomical sites, including blood, wounds, and urinary tract infections, making it a versatile pathogen. The article by **Sousa SA, 2011** presented that the bacterium's intrinsic resistance to multiple antibiotics, including aminoglycosides and polymyxins, complicates its management, particularly in healthcare settings, where nosocomial outbreaks have been reported. Its ability to survive in various environments, including hospital settings, coupled with the capacity to form biofilms, enhances its persistence and transmission.

The isolation of B. cepacia from gynecological specimens, such as endometrial fluid, is exceedingly rare. Typically, infections in the female reproductive tract are caused by more common bacterial pathogens, such as Escherichia coli, Enterococcus spp., and Staphylococcus spp. Therefore, **Gautam V et al, 2011** said that when a non-fermenting organism like B. cepacia is recovered, it raises suspicion for an atypical infection, particularly in the absence of an immunocompromised state. This report underscores the importance of microbiological investigation in cases where routine pathogens are not isolated, and unusual organisms like B. cepacia may be implicated.

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Microbiological Findings: The identification of Burkholderia cepacia in clinical specimens typically begins with its growth on selective media. In this case, endometrial fluid obtained from hysteroscopic aspiration was cultured on blood agar and MacConkey agar, where the organism grew as smooth, yellow-pigmented colonies after 24–48 hours of incubation at 37°C. In **2001 Henry DA et al** mentioned that on MacConkey agar, the colonies were non-lactose fermenting and colorless, a characteristic feature of non-fermentative gram-negative bacteria. Further biochemical testing confirmed the presence of B. cepacia. The organism tested positive for oxidase and catalase and was motile with polar flagella. It demonstrated oxidative metabolism of glucose but did not ferment lactose, consistent with the metabolic profile of B. cepacia. According to the article by **Lucca FA , 2014**The bacteria were resistant to polymyxin B and colistin, and antimicrobial susceptibility testing showed susceptibility to meropenem and trimethoprim-sulfamethoxazole, which guided the treatment regimen. These microbiological findings were crucial in identifying B. cepacia as the causative agent of the infection.

Burkholderia cepacia is a gram-negative bacillus predominantly associated with respiratory tract infections, particularly in patients with cystic fibrosis and chronic granulomatous disease. According to article **kunakom S.et al, 2019**Infections caused by this bacterium are uncommon in the general population, and its isolation from sites outside the respiratory tract, including the female reproductive system, is extremely rare. This report aims to describe a rare case of Burkholderia cepacia isolated from the endometrial fluid of a postmenopausal female, emphasizing the clinical and microbiological aspects of the case.

Presentation of Case Report

A 58-year-old postmenopausal female presented to the outpatient department with complaints of abnormal bleeding per vaginum (PV) for 8 to 10 days, followed by intermittent blood spotting. The patient had entered menopause six years ago and had no significant past medical history of chronic illness. Her obstetric history revealed P3L3, with two male and one female child, all delivered through normal labor. The patient had undergone a tubectomy in the past, and the scar was normal in appearance on examination.

On clinical examination, she was afebrile, with no signs of cyanosis or edema. Her vital signs were stable, with blood pressure measuring 90/60 mm Hg and a pulse rate of 66 beats per minute. Per abdomen examination showed no abnormalities apart from the tubectomy scar. On per speculum examination, the cervix appeared pin-point and flushed with the vaginal walls. A Pap smear was performed, which revealed a grade III inflammatory lesion, but no evidence of malignancy (NILM).

Laboratory investigations were largely within normal limits. Hemoglobin was 11.1 g/dL, white blood cell count was 6140/cumm with a normal differential count, and platelet count was 3.01 lakh/cumm. Coagulation parameters, liver and renal function tests, serum electrolytes, and thyroid function tests (TSH) were normal. Imaging studies, including a chest X-ray and 2D echocardiography did not reveal any significant findings.

A contrast-enhanced computed tomography (CT) scan of the whole abdomen revealed findings suggestive of pyometra, hematometra, or hydrometra, with a uterine size of 17x18 mm. Adjacent fat planes were intact, and cervical stenosis was suspected. Additionally, submucosal fat deposition and mild thickening of the rectosigmoid colon were noted, suggestive of chronic inflammatory bowel disease (IBD).

Diagnostic hysteroscopy with endometrial biopsy was performed, and the tissue was reported as showing inflammatory changes. Endometrial aspirate obtained during the procedure was sent for microbiological analysis,

On Blood agar and MacConkey agar, smooth, circular, and raised colonies were grown. The colonies are typically 1-3 mm in diameter, with a characteristic yellow to brownish pigmentation due to the production of melanin. On MacConkey agar, *B. cepacia* grows as non-lactose fermenting colonies, appeared pale.

Biochemically, *the colonies were* oxidase positive and catalase positive. It is non-fermentative, meaning it does not ferment glucose or lactose, but it can oxidatively utilize glucose. It reduces nitrate to nitrite, is motile. Also we used Vitek 2 Compact instrument to identify the colonies and antimicrobial sensitivity pattern. Overall findings were connsitent with Burkholderiacepacia. Sensitivity testing confirmed the isolate was susceptible to Amikacin, Gentamicin, Ciprofloxacin, Levofloxacin, Minocyclin, meropenem and trimethoprim-sulfamethoxazole. As per the AST findings the patient treated with Meropenem and responded well to the treatment.

DISCUSSION

Burkholderia cepacia is an opportunistic pathogen as mentioned by **Mahenthiralingam E et al, 2005** and its isolation from endometrial fluid represents a rare occurrence. This case underscores the importance of considering atypical organisms, particularly in immunocompetent individuals presenting with chronic or unexplained inflammatory conditions.

Although primarily linked with nosocomial infections and respiratory tract colonization in vulnerable populations, According to **Isles Aetal, 1984** Burkholderia cepacia can colonize other body sites under appropriate circumstances. In this patient, factors such as postmenopausal status and suspected cervical stenosis may have contributed to the development of a favorable environment for this bacterium to proliferate. According to **Coenye T et al,**

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2003 The absence of any significant systemic illness or immunocompromised state in the patient further accentuates the unusual nature of this infection.
Management of Burkholderiacepacia infections requires prompt and accurate microbiological diagnosis, **Lucca FA , 2014** has mentioned that the bacterium is inherently resistant to multiple antibiotics, including aminoglycosides, first-generation cephalosporins, and certain beta-lactams. In this case, the organism was susceptible to some more antibiotics includingmeropenem and trimethoprim-sulfamethoxazole, and found to be intermediate with cefepime, Aztreonam and Imipenemwhich guided the therapeutic approach.

CONCLUSION

Burkholderia cepacia is an uncommon pathogen in gynecological infections, but its isolation from endometrial fluid should not be overlooked. This case highlights the need for heightened awareness and thorough microbiological evaluation in patients presenting with unexplained gynecological symptoms, particularly when routine pathogens are not detected. Early identification and appropriate antibiotic therapy are essential to prevent potential complications.

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