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Case Report

Surgical wound infection by *Pluralibacter gergoviae* in a diabetic patient

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ABSTRACT

Pluralibacter gergoviae is reported to cause infections in immunocompromised patients and also nosocomial outbreaks. This is a case of soft tissue infection in a diabetic patient who underwent a surgery on the left breast and a bilateral reduction mammoplasty following all preliminary investigations. Post operatively, she presented with the complaints of poor wound healing and a wound gap. Immunocompromised state, uncontrolled diabetes and topical application of cream or ointment during post-operative period could be risk factors for an infection by *Pluralibacter gergoviae*. Little is known about this organism and its clinical significance. Hence documentation of such case scenarios is essential to gather more clinically relevant information.

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1. Introduction

Pluralibacter gergoviae formerly known as *Enterobacter gergoviae* is a facultative anaerobe, motile gram-negative bacilli.¹ Though an uncommon human pathogen it is known to cause opportunistic infections and also nosocomial outbreaks.^{2,3} Risk factors include prolonged hospital stays, immunosuppression, the presence of a foreign device, prior use of antimicrobial agents and extremes of age.⁴ Also in the cosmetic industry, it has been implicated in recalls of eye cream, skin cream and cleansing wipes.⁵ We present the case of a 56-year-old diabetic patient developing a soft tissue infection with *Pluralibacter gergoviae* post-surgery and the course of treatment followed thereafter.

2. Case Presentation

A 56-year-old postmenopausal patient, with a history of diabetes mellitus, hypertension and hypothyroidism,

presented with a lump in left breast since 1 month at Nanavati Max Super Speciality Hospital, Mumbai. A bilateral mammogram showed an irregular lesion in the left breast with BIRADS 5. Due to elevated fasting blood sugar level of 300 mg/dl and HbA1C of 12.5%, a PET scan could not be done. Patient underwent a left breast conserving surgery with axillary clearance and a bilateral reduction mammoplasty. On histopathological examination of the resected tissue section invasive ductal carcinoma Grade 3 of left breast with regional lymph nodes metastasis was reported. Post-operative stay in hospital was uneventful and reference was given to endocrinologist for uncontrolled diabetes. The patient was discharged with drain in situ after 7 days of hospital stay and Tablet Cefuroxime was prescribed for a duration of 5 days on discharge.

Chemoport was inserted after two weeks and the patient was given the first cycle of chemotherapy. On follow up examination, five weeks post surgery, a wound gap in the vertical limb of the incision in the right breast with delayed wound healing in both breasts was observed. The leucocyte count was 10,610/ μ l but no history of fever or

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any other signs of systemic infection were observed. Despite oral hypoglycemic agents, the blood sugar levels were still elevated with fasting at 275mg/dl and post prandial 294 mg/dl. The edges of the wound were bilaterally revised and secondary suturing was done. The necrosed tissue from the right and left breast were sent to the microbiology laboratory for culture and sensitivity. In the laboratory examination, few pus cells and gram-negative bacilli were observed. On culture, lactose non-fermenting colonies were isolated from all samples and identified as *Pluralibacter gergoviae* on VITEK2 automated system (BioMerieux, Durham, North Carolina) and confirmed by MALDI-TOF. The sensitivity test showed MIC values within susceptible range for cephalosporins, quinolones, aminoglycosides and carbapenems. Cefuroxime was prescribed for a duration of 1 week. On follow up, the wound was clean and healing well.

3. Discussion

In 1980, *Enterobacter gergoviae* was proposed as a novel species. However, in 2013, it was reclassified into the genus, *Pluralibacter*.⁶ It can be isolated from environment like soil, sewage and plants. Its natural resistance to preservatives like parabens and triclosan used in cosmetic products explains its ability to grow and contaminate these products.^{2,6,7} However, infection rates due to use of these products cannot be derived due to lack of epidemiological data at present. The first incidence of nosocomial outbreak was reported in France in 1976 where it caused urinary tract infections. Boban et al reported an outbreak of nosocomial bacteremia in a neonatal intensive care unit and Freire et al reported an outbreak of carbapenem resistant strain among kidney transplant recipients.^{8,9} Isolated cases of Plurilateral causing urinary tract infection, endophthalmitis and septic shock have also been described.^{3,10,11} The patients infected in these reports either had a polymicrobial infection or compromised immune systems due to extremes of age or malignancy. Rarely has infection occurred in otherwise healthy individuals. *Pluralibacter* isolated in nosocomial settings have often been Amp C or Extended spectrum beta lactamases (ESBL) producers depicting resistance to both third and fourth generation cephalosporins, making carbapenems the drug of choice for empirical treatment.^{4,9} Nosocomial *Pluralibacter gergoviae* isolates expressing NDM and KPC carbapenemases have also been reported in recent years.²

In the above case, the isolate was sensitive to second generation cephalosporin like cefuroxime and hence the antibiotics were not escalated. The patient also responded well to this treatment regimen. Though the source of infection is unclear in this patient, given the sporadic case that occurred in the hospital and the antibiotic sensitivity pattern it is unlikely to be of nosocomial origin. Uncontrolled diabetes, an immunocompromised state of the patient, a breach in the skin barrier due to surgery and

a lapse in post-operative wound care could increase the chances of infection by this bacterium. The clinical reports in the past mention it as a causative agent for infections of the urinary tract, respiratory tract, and bacteremia. This case however highlights the potential risk to cause a soft tissue infection by this opportunistic pathogen.

4. Consent of Patient

Consent to participate & publish-Patient or family consent has been taken

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6. Conflict of Interests

The authors have no competing interests to declare that are relevant to the content of this article.

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