

# Unusual Culprits: *Campylobacter ureolyticus* and *Prevotella disiens* as a Cause of Breast Abscess

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## Introduction

- *Campylobacter ureolyticus* (*C. ureolyticus*) is a Gram-negative, anaerobic, non-spore forming bacillus which typically causes acute gastroenteritis though may present with extraintestinal symptoms
- *C. ureolyticus* cases are frequently isolated from polymicrobial infections often in combination with gram-positive anaerobic cocci. These mixed infections commonly involve brain abscesses, intra-abdominal abscesses, and soft tissue infections.
- *Prevotella disiens* is a pigmented anaerobic Gram-negative rod that commonly colonizes oral, gastrointestinal, and vaginal flora. *Prevotella*-induced breast abscesses demonstrate high recurrence rates and require prolonged antibiotic therapy.
- *C. ureolyticus* and *P. disiens* are rarely reported together as co-pathogens and specific documentation of breast abscess is extremely limited in the literature.
- This case represents a unique etiology of breast abscess that may have been precipitated by certain overlapping risk factors for opportunistic polymicrobial infections.

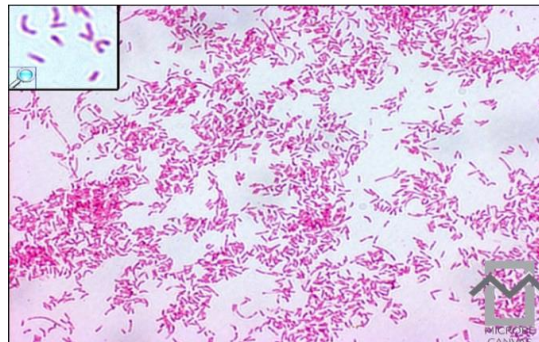
## Case Presentation

- This is a 36-year-old female who presented from jail with increasing right breast erythema and swelling for 10 days. She denied any open wound, lesion, or breast drainage.
- She previously received a prescription for oral TMP-SMX which she took for two days without significant improvement.
- She has a past medical history significant for opioid use disorder, tobacco use, anxiety, depression and she denied recent IV substance use, trauma, insect bite, ingrown hair, recent breastfeeding or pregnancy, or history of skin infection/abscess.
- On physical exam, she was well-appearing and non-toxic. Vital signs were normal. There was swelling, erythema, tenderness, and fluctuance of the right breast at the nipple without drainage noted.
- Imaging with CT chest showed complex multiloculated fluid collection versus necrotic soft tissue mass measuring 3.9 x 5.8 cm transaxially with skin thickening in the right breast. There was no overt lymphadenopathy.
- Lab results showed an elevated white blood cell count of  $12.61 \times 10^9/\mu\text{L}$ . Two sets of blood cultures were negative. Anaerobic wound cultures grew *Campylobacter ureolyticus* and *Prevotella disiens*.
- Treatment was incision and drainage by general surgery. Initially, the patient was placed on IV piperacillin-tazobactam and IV daptomycin. IV piperacillin-tazobactam was changed to IV ceftriaxone.
- She clinically improved and on day 5 she was discharged back to jail with 14 days of oral doxycycline, oral levofloxacin, and oral metronidazole.

Figure 1. CT chest showing complex multiloculated fluid collection versus necrotic soft tissue mass measuring 3.9 x 5.8 cm with skin thickening in the right breast



Figure 2. Gram stain and culture of *Campylobacter ureolyticus*, courtesy of Microbe-Canvas



## Discussion

- Breast abscesses occur most commonly when mastitis or cellulitis does not respond to antibiotic treatment though abscess can also be the first presentation of breast infection.
- Non-lactating breast abscess more commonly presents in African-American patients, patients with obesity (BMI >30), and smokers for reasons not completely understood.
- Breast abscesses in non-lactating women demonstrate more polymicrobial infection with a higher proportion of anaerobes. Size correlates with microbiology – smaller abscesses (<3 cm) predominantly harbor mixed anaerobes.
- The source of infection likely represents translocation from oral or gastrointestinal flora. Tobacco smoking is the most significant modifiable risk factor for developing anaerobic breast abscess caused by organisms such as *C. ureolyticus* and *P. disiens*.
- *C. ureolyticus* demonstrates concerning resistance patterns; data is limited on breast abscesses though *Campylobacter* species show high fluoroquinolone and macrolide resistance.
- This patient received empiric piperacillin-tazobactam which is effective against both *C. ureolyticus* and *P. disiens* and IV daptomycin for empiric coverage against methicillin-resistant *Staphylococcus aureus* (MRSA) which is a common cause of breast abscess.
- Our patient's outpatient antibiotics included levofloxacin which is used in complicated skin and soft tissue infections, doxycycline for empiric MRSA coverage, and metronidazole for anaerobic organisms including *C. ureolyticus* and *P. disiens*.
- This case emphasizes the diagnostic value of anaerobic cultures in breast abscesses and supports the use of antibiotics with reliable anaerobic coverage in conjunction with adequate source control.

## References

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