



CASE REPORT

Tissierella Praeacuta Bacteremia Secondary to Infected Pseudoarthrosis

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Abstract

The gram negative rod shaped bacterium *Tissierella praeacuta* is rarely reported in the medical literature, with only a handful of case reports seen on literature search. We present here a case report of a middle aged female with a complicated hospital course after right hip fracture with subsequent right hip open reduction, internal fixation procedure. Most notably, the patient had recurrent fevers despite multiple antibiotic regimens which were originally thought to be due to pneumonia. Blood cultures isolated *T. praeacuta* in this patient with the most likely source being her right pseudoarthrosis, which has been associated with the organism in previous reports. Our patient was successfully managed with a regimen of piperacillin-tazobactam.

Keywords: *Tissierella*, bacteremia, pseudoarthrosis, pseudoarthroses

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1 | INTRODUCTION

Previously known as *Clostridium hastiforme*, *Tissierella praeacuta* is a gram-negative, anaerobic, rod-shaped bacterium that was first described in 1908 by Tissier (1,4) *T. praeacuta* has only been rarely described in previous literature, with only five reported cases to date (2,8) .We report a unique case of septic pseudoarthrosis with associated bacteremia secondary to this distinct microorganism.

2 | CASE

A sixty year old African American female with no known past medical history originally presented to our facility for right hip pain after a fall at home. Patient at that time was found to have a right hip fracture and underwent open reduction with internal fixation. After her surgery, the patient's hospital stay was complicated over the subsequent days by fevers, leukocytosis, and right middle lobe opacities with pleural effusion which was diagnosed as bacterial pneumonia, although sputum cultures did not identify a particular organism. Patient received antibiotic therapy with various antibiotics but her condition continued to worsen, requiring higher and higher supplementation oxygen to the point where she re-

quired endotracheal intubation. Despite completing multiple antibiotic regimens before and after intubation, the patient continued to have persistent fevers and leukocytosis. Because she was unable to tolerate extubation given increased oxygen requirements and inability to be weaned, the patient underwent tracheostomy. Her condition clinically improved after tracheostomy but she continued to have fevers and leukocytosis that would return shortly after completion of antibiotic regimens. Repeat blood, urine, and sputum cultures were continually negative during her stay. Upon one set of repeat cultures however, she grew *Tissierella praeacuta* in her blood. Exhaustive search for the source of the *T. praeacuta* was performed, including computed tomography of her right hip which revealed a small area of fluid collection. When reviewed by our interventional radiology department however, it was determined that the area would not be large enough for sampling. Patient was treated with piperacillin-tazobactam for 7 days with complete resolution of her fevers and repeat blood cultures were negative.

3 | DISCUSSION

Despite the genus *Clostridium* comprising over 200 species, the number of clinically significant bacterium is quite limited. Initially isolated from infant feces in 1908, *T. praeacuta* has been referenced as the causative pathogen in cerebral abscess, pseudarthrosis, pyometra (accumulation of pus inside of the uterus) and blood-stream infections (4,5, 8). *T. praeacuta* has only rarely been described as a human pathogen and a literature review only reveals a few known case reports of clinically relevant infections (3,6). In our case, the possible source of septic arthritis may be from the soil, either by contamination of the open femur fracture after her fall

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or subsequent bacterial translocation (7, 9). This case illustrates an unusual cause of septic arthritis with subsequent bacteremia due to a rare anaerobic pathogen (10). The identification of this microorganism is of utmost importance for the early initiation of anaerobic antimicrobial treatment. Previous reports have shown effective treatment with meropenem as well as piperacillin-tazobactam, which we successfully used in the treatment of our patient.

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Consent for publication: Not applicable

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REFERENCES

1. Tissier H. Recherches sur la flore intestinale normale des enfants ages d'un an à cinq ans. *Ann Inst Pasteur* 1908;22:198–208 ;
2. Caméléna, F., Pilmis, B., Mollo, B., Hadj, A., Monnier, A. L., & Mizrahi, A. (2016). Infections caused by *Tissierella praeacuta*: A report of two cases and literature review. *Anaerobe*, 40, 15-17. doi:10.1016/j.anaerobe.2016.04.015 ;
3. Ørum, M., Fuglsang-Damgaard, D., & Nielsen, H. L. (2017). *Clostridium hastiformebacteremia* secondary to pyometra in a 64-year-old woman. *BMJ Case Reports*. doi:10.1136/bcr-2016-218084 ;
4. Simmon, K., Mirrett, S., Reller, L., & Petti, C. (2008). Genotypic Diversity of Anaerobic Isolates from Bloodstream Infections. *Journal of Clinical Microbiology*, 46(5). doi:10.1128/JCM.02469-07 ;

5. Jalota, R., Diaz, A., & Anjum, F. (n.d.). Necrotizing Lung Abscess in Setting of Bacteremia Caused by Clostridium Hastiforme (Tissierella Praeacuta). American Journal of Respiratory Critical Care Medicine. Retrieved 2020, from https://www.atsjournals.org/doi/pdf/10.1164/ajrcmconference.2020.201.1_MeetingAbstracts.A3909 ;.
6. Samanta, P., Molla, I., & Lenox, T. (2016). Clostridium hastiforme Sepsis in a Patient with Gastrointestinal Malignant Disease. Surgical Infections Case Reports. doi:<https://doi.org/10.1089/crsi.2016.0010> ;.
7. Schweizer, M., Bloemberg, G., Graf, C., Falkowski, A., & Ochsner, P. (2016). Chronic Osteomyelitis Due to Tissierella carlieri: First Case. Open Forum Infectious Diseases. ;.
8. Alauzet C, Marchandin H, Courtin P, et al. Multilocus analysis reveals diversity in the genus Tissierella: description of Tissierella carlieri sp. nov. in the new class Tissierellia classis nov. Syst Appl Microbiol 2014; 37:23–34. ;.
9. Walter G, Vernier M, Pinelli PO, et al. Bone and joint infections due to anaerobic bacteria: an analysis of 61 cases and review of the literature. Eur J Clin Microbiol Infect Dis 2014; 33:1355–64. ;.
10. Del Pozo JL, Patel R. Clinical practice. Infection associated with prosthetic joints. N Engl J Med 2009; 361:787–94. ;.

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