

Granulicatella adiacens: An uncommon pathogen in prosthetic joint infections

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Abstract

Granulicatella adiacens is an uncommon culprit in prosthetic joint infections, especially when predisposing factors are absent. Here, we present the case of a 78-year-old female who developed an acute surgical site infection shortly after undergoing left total knee arthroplasty. Despite initial negative cultures, subsequent analysis identified Granulicatella adiacens in the knee fluid, marking only the second reported instance in the United States and the seventh globally. This singular case highlights the considerable challenges associated with isolating this organism, emphasizing its atypical presentation and diagnostic elusiveness. Typically associated with endocarditis and bacteremia, its involvement in isolated surgical site infections is particularly unusual.

Our case underscores the necessity for heightened clinical suspicion and the adoption of specialized diagnostic methodologies to accurately detect Granulicatella adiacens infections. Given its fastidious nature and nutritional requirements, standard culture methods may fail to identify this pathogen, necessitating alternative diagnostic approaches. As such, the utilization of specialized media becomes paramount in clinical diagnostics to facilitate appropriate management and optimize healthcare resource allocation. By enhancing our ability to detect and treat infections caused by Granulicatella adiacens, we can mitigate patient morbidity and reduce the burden of unnecessary interventions, thereby improving patient outcomes and healthcare efficiency.

Keywords: Surgical site infection; Total knee arthroplasty; Granulicatella adiacens; Prosthetic joint infection; Specialized media

1. Introduction

An elderly female was diagnosed with an acute surgical site infection within two weeks of undergoing left total knee arthroplasty via the lateral approach. Imaging studies revealed no evidence of hematoma collection or any other clear source of infection. The distal incision site initially presented with warmth, erythema, and serous fluid drainage, which later progressed to purulent discharge with copious drainage. Instead of swabbing, knee aspiration was performed, and the sample underwent laboratory analysis, eventually yielding a positive result for Granulicatella adiacens. The analysis indicated a total leukocyte count (TLC) of 974, with 81% neutrophils and 6500 red blood cells. This case represents potentially, only the second reported instance of a prosthetic joint infection with Granulicatella in the United States, with it being only the seventh worldwide to the best of our knowledge.

2. Discussion

Literature indicates the rarity of isolating Granulicatella adiacens in isolated pyogenic infections, particularly in the absence of other risk factors such as Diabetes Mellitus. Furthermore, Granulicatella adiacens is notoriously difficult to isolate due to its classification as a nutritionally variant streptococcus (NVS), necessitating the incorporation of

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pyridoxal or L-cysteine into standard media for successful isolation. Typically considered a fastidious, facultative anaerobe, *Granulicatella adiacens* is primarily associated with bacterial endocarditis and bacteremia rather than acute, isolated surgical site infections. In response to this unique diagnosis, a decision was made to perform a washout in the operating room using Bactisure Wound Lavage, and only the polyethylene glycol (PEG) components of the prosthetic knee were replaced. Despite initially negative culturing, subsequent tests identified *Staphylococcus*, with gram-positive cocci in chains, eventually implicating *Granulicatella adiacens* as the causative pathogen. This case underscores the imperative for wider incorporation of specialized media in the inpatient clinical setting to facilitate more targeted antibiotic therapy and effectively combat infections, thereby optimizing healthcare resource utilization and reducing unnecessary hospital spending.

3. Conclusion

The identification of *Granulicatella adiacens* in this case highlights the necessity for heightened clinical suspicion and the utilization of specialized media in the diagnosis of prosthetic joint infections. Our findings advocate for the broader implementation of such diagnostic tools in the inpatient setting to facilitate timely and targeted antimicrobial therapy, thus minimizing patient morbidity and healthcare costs associated with prolonged hospital stays and unnecessary interventions.

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