

241. A Comparison of Staphylococcal and Streptococcal Septic Arthritis with Lyme Arthritis

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Session: P-12. Bone and Joint

Background. Septic arthritis is considered the most important differential diagnosis in suspected Lyme arthritis. The present study sheds light on the most frequent misdiagnoses in Lyme arthritis cases and clues for differentiation from Staphylococcal and Streptococcal septic arthritis.

Methods. We studied patients with positive joint fluid cultures with *Staphylococcus aureus* (SA) and streptococci and Lyme polymerase chain reaction (PCR) positive joint fluid in 9 hospitals in Eastern Pennsylvania and 1 in Warren county, New Jersey over a 3 year period.

Results. One hundred and thirty four out of 7000 SA and 21 out of 1321 streptococcal isolates were from joint fluid. Twenty nine had Lyme arthritis, ages 5-74 (24 males, 5 females). Twelve out of 29 were ages 10-18 with 20/29 under age 40. Predominant joint affected was a single knee 27/29. All had pain with or without swelling and little erythema. Two had fever. One reported a tick bite. None had other manifestations of Lyme disease. The diagnosis at the initial visit was sprain or sports injury in 5, osteoarthritis in 5, inflammatory arthritis or gout in 2 each, i septic arthritis, 1 viral syndrome and 1 ruptured Baker's cyst. Joint fluid count range was 3500-77,360 with only 3 over 50,000. White blood cell count (wbc) range was 3200-14,580. SA arthritis involved knee in 66 (49.3%), hip 31 (23.9%), elbow 19 (14.2%), shoulder 14 (10.4%) with 2 wrist, 1 ankle and 1 sterno-clavicular joint. Fifty seven had a history of joint surgery. Eighty six were male and 48 female. age range 14-95 with a median age 65. Synovial fluid cell count was 335-470,000 and wbc 5,200-28,410. Streptococcal septic arthritis (13 male 8 female) involved the knee in 17/21 with one each of hip, elbow, shoulder. The ages were 36-86 with 15/21 over age 60. Synovial fluid count was 15,242-641,425. Wbc count 11,140-25,080. Nine out of 21 had prior joint surgery.

Conclusion. Lyme arthritis patients were younger, mostly involving 1 knee, majority male without other manifestations of Lyme disease. Highest synovial fluid count was 77,360 and highest wbc count 14,580. Most frequent misdiagnoses were sports injury/sprain or osteoarthritis. SA and Streptococcal arthritis were mostly in elderly, with higher joint fluid cell and wbc counts. Only 1/29 Lyme arthritis was initially misdiagnosed septic arthritis.

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242. Rising Incidence of *Finegoldia magna* among Prosthetic Joint Infections

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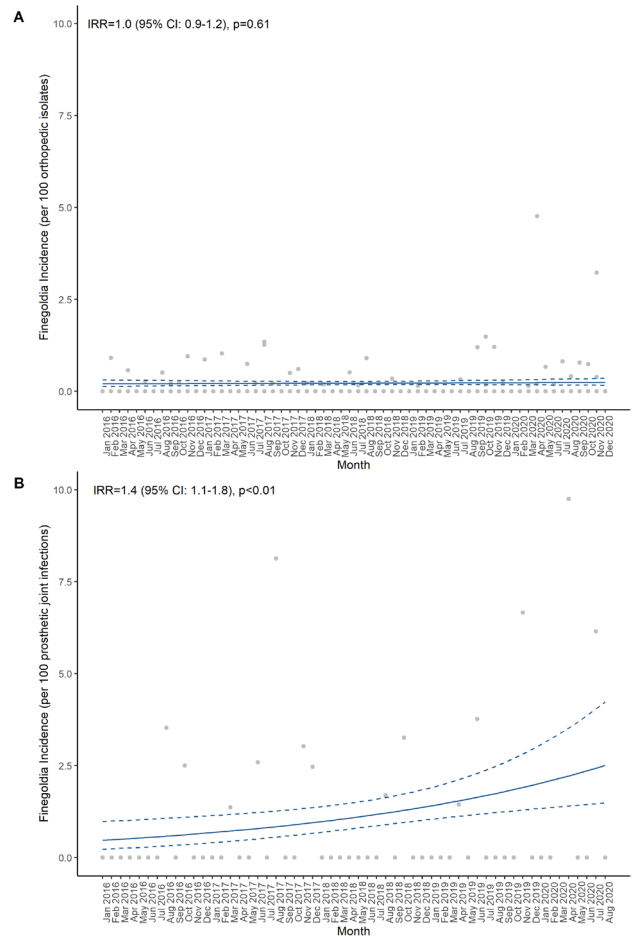
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Background. *Finegoldia magna* is an anaerobic, Gram-positive coccus infrequently associated with osteoarticular infections. Since the adoption of matrix-assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF), *F. magna* has been increasingly reported as a cause of osteoarticular infections. Our objective was to determine the incidence of *F. magna* prosthetic joint infections (PJIs) within our institution.

Methods. We conducted a retrospective longitudinal survey from 1 January 2016 - 31 December 2020 at an academic tertiary care referral center. We constructed two Poisson count models to assess the incidence of *Finegoldia magna* PJIs: one consisting of a clinical microbiology database of synovial fluid and surgical tissue cultures and one using a PJI registry. Time served as the covariate of interest. We used number of cultures as an offset term in the clinical microbiology model, and number of PJI cases as the offset term in the prosthetic joint registry model -reflecting the relevant denominator for each dataset. The microbiology database was limited to synovial fluid aspirates and surgical tissue cultures to minimize risk of confounding by contaminants.

Results. The PJI registry included 44 *F. magna* infections occurring among 4,706 (0.9%) PJIs. The microbiology survey included 99 *F. magna* isolates from 43,940 (0.2%) cultures sent from joint aspirates or surgical tissue cultures. Among overall synovial and surgical tissue cultures, we found no significant increase in *F. magna* over time (incidence rate ratio [IRR] 1.0, 95% CI: 0.9-1.2, Figure 1A). Within the PJI registry, however, we observed a 40% per-year increase in *F. magna* incidence (IRR 1.4, 95% CI: 1.1-1.8, Figure 1B).

Figure 1



Incidence of *Finegoldia magna* Over Time

Conclusion. Adoption of MALDI-TOF has expanded the clinical microbiology laboratory's capacity for rapid speciation, sometimes revealing previously unseen epidemiologic trends. While we saw no significant change in overall incidence of *F. magna* among synovial and surgical tissue cultures, we did detect a significant increase specifically among PJI cases. *F. magna* warrants attention as an emerging pathogen among PJI.

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243. Analysis of Risk Factors Associated with Adverse Outcomes Following Calcium Sulfate Bead Use in Periprosthetic Joint Infections

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Background. Calcium sulfate (CS) beads are increasingly utilized in orthopedic surgeries as a delivery vehicle to administer local antimicrobials intraoperatively. Hypercalcemia, AKI, and elevated serum antimicrobial levels have been reported as potential complications, especially with higher bead volumes. We analyzed the risk factors associated with adverse outcomes among patients with PJIs who received intraoperative CS beads loaded with tobramycin and vancomycin.