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

DON KANNANGARA, MD,MSC,PhD,DTM&H,MRCP[1]; Dhyanesh Pandya, MD[1]; [1]St Luke's University Health Network, Bethlehem, Pennsylvania

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 was15,242-641,425 . Wbc count 11,140-25,080 .Nine out 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.

Disclosures. **All Authors**: No reported disclosures

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

Nicholas A. Turner, MD, MHSc[1]; Lefko T. Charalambous, MBA[2]; Ayden Case, n/a[1]; Isabelle S. Byers, BA[3]; Jessica Seidelman, MD, MPH[1]; [1]Duke University, Durham, North Carolina; [2]Duke University Medical Center, Dept. of Orthopaedics, Durham, North Carolina; [3]Duke University School of Medicine, Durham, North Carolina

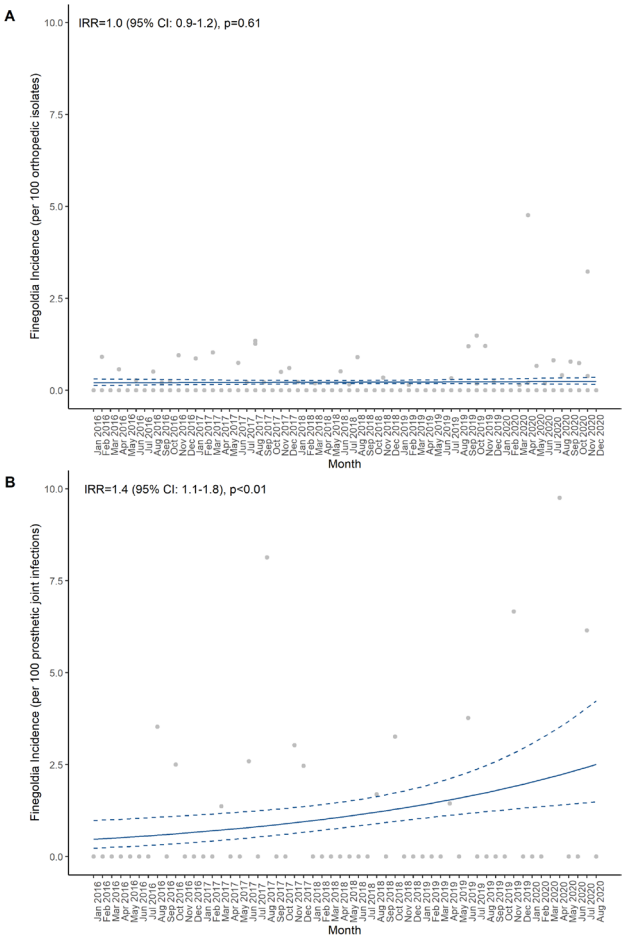
Session: P-12. Bone and Joint

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.

Disclosures. **All Authors**: No reported disclosures

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

Christine Pham, PharmD, BCIDP[1]; Holly E. Ross, MSN, RN[2]; Tara Vijayan, M.D., M.P.H.[3]; Susan Bukata, M.D.[2]; Merna Mekheal, MPH[2]; Daniela Markovic, MS[2]; Sujan Silakar, BS[4]; [1]University of California, Los Angeles; David School of Medicine/ University of California, Los Angeles, Los Angeles, California; [2]UCLA Health, Santa Monica, California; [3]UCLA David Geffen School of Medicine, Los Angeles, California; [4]UCLA Health System, Los Angeles, California

Session: P-12. Bone and Joint

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.

Methods. We conducted a retrospective review of adult patients with PJIs who received CS beads from October 2019 to October 2020. Primary outcomes included the incidence of AKI (defined using RIFLE criteria) and hypercalcemia (≥ 11 mg/dL). Logistic regression with forward entry selection of independent variables based on a liberal probability significance of $\alpha < 0.25$ was used to model the relationships between our variables. Independent variables with clinical relevance that did not meet the conditional selection were also included in the model.

Results. A total of 171 adult patients were included for the analysis. Postoperative AKI occurred in 42 patients (24.6%) who received a mean bead volume of 32 cc. Hypercalcemia occurred in 16 patients (9.4%) who had a mean bead volume of 40 cc. In a univariate analysis, the odds of having AKI and hypercalcemia increased significantly per 10 cc of bead volume with ORs of 1.39 (95%CI, 1.06, 1.82) and 1.65 (95%CI, 1.20, 2.29), respectively. In a multivariate analysis, significant predictors of AKI included: increased bead volume (aOR 1.52; 95%CI, 1.10-2.10), female sex (aOR 2.77; 95%CI, 1.00-7.71), CHF (aOR 3.48; 95%CI, 1.08-11.28), and CAD (aOR 3.90; 95%CI, 1.25-12.18). In the adjusted model, serum tobramycin levels increased (OR 2.67; 95%CI, 1.83-3.90), calcium levels increased with a mean of 0.2 mg/dL (95%CI, 0.12, 0.28), and GFR decreased with a mean of 5.6% (95%CI, 2.8, 8.7) per 10 cc bead volume. In a subset analysis, individuals more likely to experience AKI were patients aged 65 and older (OR 1.9; P=0.039) and had CAD (OR 15.26; P=0.028).

Conclusion. Higher volume of CS beads loaded with vancomycin and tobramycin is associated with adverse outcomes. Older patients with heart disease may be at higher risk for adverse outcomes.

Disclosures. **All Authors**: No reported disclosures

244. Risk Factors Associated with Complications/Sequelae in Pediatric Patients with Osteomyelitis

Nancy Evelyn Aguilar Gómez[1]; Aaron Espinosa Atri, n/a[1]; Rafael Oscar Santamaría Vásquez, n/a[1]; Alejandra Aquino Andrade, n/a[1]; Isabel Medina Vera, n/a[1]; Oscar Daniel Isunza Alonso, n/a[1]; Leonor Patricia Saltigeral Simental, n/a[1]; [1]Instituto Nacional de Pediatría, Mexico, Distrito Federal, Mexico

Session: P-12. Bone and Joint

Background. Osteoarticular infections are serious invasive pathologies in the pediatric population. They have high morbidity, especially if antimicrobial treatment is inadequate and late. Based on pediatric series patients with osteomyelitis require prolonged antibiotic schemes, long stay and high hospital costs, multiple surgical procedures and develop short and long-term sequelae.

Methods. A retrospective, observational, longitudinal and analytical study was conducted in patients under 17 years of age diagnosed with osteomyelitis at the National Institute of Pediatrics from January 2009 to January 2019. Demographic information, clinical presentation, microbiological, treatment and six-month follow-up were recorded.

Results. A total of 109 patients were included, 57 (52%) males with median age of 98 (1-205) months with predominance in previous healthy (66%). By temporality, the chronic form predominated in 72%. The history of trauma was identified in 26% and fracture 19%. The most affected bone was femur 26%. Blood culture was performed in 55%, secretion culture in 52.2% with isolation in 56%. Methicillin-susceptible *Staphylococcus aureus* (MSSA) was the main agent identified. Complications occurred in 37%, the most frequent was surgical wound infection in 13% followed by fracture 11%. Risk factors for complications were chronic osteomyelitis RR 5.7 (CI 1.8-17.9), Sepsis/Shock RR 3.8 (CI 1.08-13-8) and MSSA infections RR 2.7 (CI 1.01-7.5); Risk factors for surgical site infection included initial fracture RR 3.5 (CI 1-11), local ulcer RR 4.2 (CI 1.3-13.06) and MSSA infection RR 5.9 (CI 1.8-19.4). Risk factors for limitation to movement included chronic osteomyelitis RR 4.87 (CI 1.6-14), fever RR 2.5 (CI 1.15-5.5), Sepsis/shock RR 5.3 (CI 1.3-20) (p 0.013) and MSSA infection RR 4.1 (CI 1.4-11.9).

Conclusion. Osteomyelitis is still a health problem in our country. The diagnosis of osteomyelitis may be challenging as lack of suspicion often leads to delayed diagnosis. Knowledge of the risk factors for complications in pediatric patients could be useful to give early and proper antibiotic and surgical treatment. It is a priority to have a multidisciplinary team for the diagnosis and treatment of osteoarticular infections.

Disclosures. **All Authors**: No reported disclosures

245. Risk Factors Associated with Open Fracture Complications Following Antibiotic Prophylaxis

Elizabeth Cusack, PharmD[1]; Kaylee Maynard, PharmD, BCCCP[2]; Ted Louie, M.D.[3]; John Gorczyca, MD[2]; Courtney M. Jones, PhD, MPH[4]; Nicole M. Acquisto, Pharm.D., FASHP, FCCM, FCCP, BCCCP[2]; Stephanie Shulder, PharmD, BCIDP[2]; [1]University of Rochester Medical Center-Strong Memorial Hospital, Rochester, New York; [2]University of Rochester Medical Center, Rochester, New York; [3]University of Rochester, Rochester, New York; [4]University of Rochester, School of Medicine, Rochester, New York

Session: P-12. Bone and Joint

Background. Surgical site infection is concerning after an open fracture. The Eastern Association for the Surgery of Trauma guidelines provide antibiotic selection and duration recommendations based on open fracture type. Risk factors for open fracture complications (e.g. infection, acute kidney injury [AKI], multi-drug resistant organisms [MDRO], or *Clostridioides* infection [*C. difficile*]) and overall guideline adherence are unclear at our institution.

Methods. This was a single center, retrospective study of adult patients with an open fracture who received antibiotic prophylaxis and were admitted for at least 24 hours between March 2011 and October 2020. Patients were excluded if open fracture was due to gun-shot wound, had a history of renal replacement therapy, MDRO, or *C. difficile* infection, were an outside hospital transfer, received antibiotics for another indication, or had a delayed presentation. The primary outcome was to identify risk factors for infection and secondary outcomes to identify risk factors for AKI, MDRO, *C. difficile* infection, and to evaluate guideline adherence. Patient demographics including injury details and management, microbiologic cultures, and antibiotic information were collected. Data were analyzed by univariate analysis, as appropriate, and logistic regression.

Results. A total of 401 patients met study criteria; median age 46 years, 62% male, and 77% white. Fracture classifications were similar: 30% type I, 39% type II, and 30% type III. Infection occurred in 18% of patients, AKI in 18%, MDRO in 3%, and no patients developed *C. difficile*. Of those with culture-positive infection, 51% grew gram-positive organisms. In bivariate analysis, fracture classification (p=0.023), medical fracture management (p=0.034), and antibiotic choice (p=0.004) were associated with infection. The only independent risk factor associated with AKI was receiving a nephrotoxic medication (p=0.012). Eighty-one percent received guideline adherent antibiotics and of those that received too narrow antibiotics, 36% developed an infection (p=0.004).

Conclusion. Appropriate fracture classification and antibiotic choice is crucial to reduce infection following open fracture. Reducing concomitant exposure to nephrotoxic agents may reduce the risk of AKI.

Disclosures. **All Authors**: No reported disclosures

246. Particularities of Non-axial Osteoarticular Tuberculosis Among Adults

Fatma Hammami, MD[1]; Makram Koubaa, MD[1]; Amal Chakroun, MD[1]; Khaoula Rekik, MD[1]; Chakib Marrakchi, MD[1]; Fatma Smaoui, MD[1]; Mounir Ben Jemaa, MD[1]; [1]Infectious Diseases Department, Hedi Chaker University Hospital, University of Sfax, Tunisia, Sfax, Sfax, Tunisia

Session: P-12. Bone and Joint

Background. Osteoarticular tuberculosis (TB) represents 1% to 3% of all TB cases, among which spondylodiscitis is the most common presentation of the disease. Non-axial TB is less frequent. We aimed to study the clinical, therapeutic and evolutionary features of non-axial osteoarticular TB.

Methods. We conducted a retrospective study including all patients hospitalized in the infectious diseases department for non-axial osteoarticular TB between 1999 and 2019.

Results. We encountered 51 cases, among which 26 cases were males (51%). The mean age was 41±20years. Ten patients were previously treated for TB (19.6%). The revealing symptoms were fever (70.5%), asthenia (68.6%), weight loss (60.7%) and night sweets (43.1%). Arthritis was noted in 20 cases (39.2%) represented by TB of the hip (10 cases), knee (4 cases), shoulder (4 cases) and elbow (2 cases). There were 12 cases of sacroiliac osteoarthritis (23.5%) and 6 cases of femur osteomyelitis (11.7%). Other affected sites included sternum (7.8%), toe (5.9%), tibia (5.9%), mandible (2%), clavicle (2%) and mastoid bone (2%). Multifocal TB was noted in 12 cases (23.5%). Pulmonary TB was associated to osteoarticular TB in 13.7% of cases. The mean duration of antitubercular therapy was 10±5months. Fixed dose combinations were prescribed in 17.6% of the cases. The disease evolution was favorable in 47 cases (92.1%). Relapse was noted in 3 cases (5.8%) and death in one case (2%).

Conclusion. Non-axial osteoarticular TB was not a rare disease. Multiple sites might be involved which facilitate the diagnosis confirmation. Prolonged antitubercular therapy might be required.

Disclosures. **All Authors**: No reported disclosures

247. The Predictive Value of Methicillin-Resistant *Staphylococcus aureus* Surveillance Swabs in Septic Arthritis

Samuel Harder, MD[1]; Kwame Asiamah, B.Sc. Physiology and Pharmacology[1]; Geoffrey Shumilak, MD[2]; Beverly J. Wudel, MD, FRCPC[2]; [1]University of Saskatchewan College of Medicine, Saskatoon, Saskatchewan, Canada; [2]University of Saskatchewan, Saskatoon, Saskatchewan, Canada

Session: P-12. Bone and Joint

Background. Septic arthritis is a destructive form of acute arthritis secondary to infection. With an annual incidence of 2 to 5 cases per 100 000 individuals, it is associated with significant morbidity and mortality. Prompt source control and antimicrobial therapy remain the mainstays of management. Epidemiology, microbiology studies, and local resistance patterns are important in guiding therapeutic decisions. Staphylococcal and streptococcal species are the most common pathogens with Methicillin-resistant Staphylococcus aureus (MRSA) becoming an increasingly important pathogen. The increasing incidence of MRSA provides clinicians with the challenge of deciding which patients require empiric coverage for MRSA. MRSA nasal screening has been shown to have a high negative predictive value in pneumonia, bloodstream infections, and nosocomial infections in critically ill patients. However, little is known about the diagnostic utility of MRSA surveillance swabs for predicting MRSA infections in septic arthritis.

Methods. A retrospective cohort study was performed in 3 tertiary hospitals from September 1, 2010 to December 31, 2020. All adult patients with confirmed septic arthritis of the ankle, wrist, knee, or hip and an MRSA surveillance swab performed within 72 hours of admission were included in the study. These data were used to calculate the