90. Increasing Kingella Identification in Bone and Joint Infections in Young Children
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Background. Kingella kingae is an increasingly recognized pathogen among young children with bone and joint infections. Antibiotics given to cover methicillin-resistant Staphylococcus aureus (MRSA) were not effective against Kingella, and necessitate additional empiric antibiotics in this age group. Improving Kingella identification can narrow antibiotic choices and improve efficacy for long-term oral therapy.

Methods. We implemented a bone and joint infection guideline at a free standing children’s hospital that called for early imaging, focal sampling, and polymerase chain reaction (PCR) testing for culture-negative specimens. The goal was to increase identification of Kingella and other pathogens to improve targeted antimicrobial therapy. Children 6 to ≤ 60 months of age with uncomplicated acute hematogenous osteomyelitis or septic arthritis between January 1, 2008–December 31, 2016, were included in this study. Outcomes of bacterial identification were measured.

Results. Charts for 49 cases that met criteria were reviewed. Prior to the algorithm, we identified Kingella in 4% (1/25) of cases. Following routine use of updated sampling and testing techniques, including PCR testing, Kingella kingae identification increased to 28% of cases (7/24; P = 0.02) and, in fact, was the predominant pathogen identified in this age group.

Conclusion. Identification of Kingella was enhanced as a result of changes to sampling and testing, including PCR testing (Figure 1). Post-implementation, Kingella was more commonly identified than Staphylococcus aureus. Wide adoption of PCR testing in the future may allow for the use of narrowed antibiotic therapy and targeted transition to oral antibiotics in young children with bone or joint infection.

Figure 1. Bacterial identification pre and post guideline among children aged 6–60 months.

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91. Microbiology of Vertebral Osteomyelitis and Implications on Empiric Therapy
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Background. The management of vertebral osteomyelitis (VO) includes empiric antibiotic therapy while clinical cultures are being processed. Optimal antimicrobial therapy for VO, particularly when Gram-negative (GN) organisms are involved, is an area of ongoing debate. Narrow spectrum and oral antimicrobial therapy are preferred. The objective of this study was to identify characteristics of local pathogens and to formulate an institution-specific antibiotic protocol for empiric treatment of VO.

Methods. We conducted a retrospective case series study of adults diagnosed with VO from August 1, 2010 to August 31, 2015 at Palmetto Health Hospitals in Columbia, South Carolina. Cases identified by ICD-9 codes were included in the analysis if they met medical, imaging and microbiological criteria.

Results. Analysis is based on 150 cases of VO with a mean age of 61 years, a male predominance (91; 61%), and an average body mass index of 29kg/m2. Comorbidities included diabetes mellitus (69; 46%), tobacco use (33; 22%), and hemodialysis (20; 13%). Thirty-seven (25%) cases had recent related injury or surgical surgery, and 14 (9%) had prior hardware. Bone, disc, or adjacent tissue cultures were obtained in 129 (86%) of cases; 60 (40%) of these had >1 sample taken. The remaining 14% had blood cultures alone. Thirty-six (24%) cases had culture negative VO. In the remaining 114 cases, 132 organisms were isolated. A total of 111 (84%) organisms were Gram-positive cocci (GPC). Of those, the majority was Staphylococcus aureus (66; 59%) (26/66 were methicillin-resistant), coagulase-negative staphylococci (20; 18%) and Streptococcus spp. (17; 15%). Enterobacteriaceae accounted for 13/17 Gram-negative bacilli (GNB), with only one isolate of Pseudomonas aeruginosa. Of the GNB, 11/17 were susceptible to either ceftriaxone or ciprofloxacin. Conclusion. There was a predominance of VO due to GPC suggesting that intravenous vancomycin monotherapy may be reasonable for empiric therapy in noncritically ill patients while awaiting Gram stain and clinical culture results. Addition of either ceftriaxone or ciprofloxacin to vancomycin would increase cumulative antimicrobial coverage from 84 to 92%.

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Table 1. Micro-organisms isolated from blood and tissues in 135 patients with pyogenic spondylitis

| Micro-organism                              | Isolates (n = 135) |
|---------------------------------------------|--------------------|
| Staphylococcus aureus                       | 85                 |
| Viridans streptococci                       | 11                 |
| Streptococcus agalactiae                    | 8                  |
| Escherichia coli                            | 8                  |
| Enterococcus faecalis                       | 4                  |
| Klebsiella pneumonia                        | 2                  |
| Others                                      | 17                 |
| Discordant (n = 6)                          |                    |
| Blood                                       |                    |
| Coagulase-negative-staphylococcus           |                    |
| Streptococcus constellatus                  |                    |
| Actinomyces meyeri                          |                    |
| Staphylococcus epidermidis, viridans        |                    |
| Streptococcus                              |                    |
| Staphylococcus aureus                       |                    |
| Staphylococcus aureus, Nontuberculous mycobacteria |                |

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