P2515 Orthopaedic implant-related infections: in the era of rapid diagnostics, are conventional microbiological diagnostics sufficiently expedient?

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Background: In a time where rapid diagnostics are increasingly sought, standard procedure for detection of microbes causing orthopaedic implant-related infections (OIRI) seems extensive and time-consuming, taking in worst cases up to 10-14 days. As we are in the process of developing a pipeline for rapid diagnostics of these infections, we investigated several aspects of conventional microbiological diagnostics: a) time to results, b) pathogen identification, c) percentage of culture-negative samples and d) the prevalence of patients whose treatment was changed based on microbiological diagnostic results.

Materials/methods: Patients aged ≥18 years operated for acute OIRI with first revision surgery in 2017 at Akershus University Hospital, Norway, were included. Microbiological diagnostics were performed according to standard protocols which included cultivation of 5 tissue samples on 5 different media and antibiotic susceptibility testing according to EUCAST guidelines. Information regarding microbiological diagnostics and clinical data was collected retrospectively from the hospital’s diagnostic and clinical databases. Time to results were defined as time from sampling to identification of pathogen, time to antibiotic treatment advice and time to completed analyses including anaerobic cultivation.

Results: 76 patients were included. Time to identified pathogen was median 68 hours [16-193], time to antibiotic treatment advice 87 hours [36-193] and time to final results was 141 hours [71-299]. The most common pathogens were S. aureus (42/76, 55%) and S. epidermidis (16/76, 21%). Other pathogens were identified in less than 10% of the patients. 4 patients had culture-negative samples. In 48/73 (66%) patients receiving antibiotics, treatment was changed due to microbiological identification. Median time to treatment change was 7 days [1-30]. 3 patients did not receive antibiotic treatment.

Conclusions: Standard microbiological diagnostics of OIRI is time-consuming with >2.5 days to identification of the pathogen and >3.5 days to targeted treatment advice. The majority of OIRIs were caused by S. aureus (55%) or S. epidermidis (21%) and only 5% of the patients had culture-negative biopsies. As treatment was changed in 48/73 patients within a median of 7 days, rapid diagnostics of OIRI may significantly reduce the time to targeted treatment.