

Session: EV021 Nosocomial infection surveillance & epidemiology

Category: 8b. Other foreign-body and implant infections

22 April 2017, 08:45 - 15:30
EV0354

Presence of joint prosthesis is associated with increased risk for infection due to oral-cavity bacteria

Eva Vacha^{*1}, Herbert Deppe², Andrej Trampuz³, Nina Wantia⁴

¹*Institute of Medical Microbiology, Immunology and Hygiene; Technical University Munich*

²*Technical University Munich, Germany; Clinic and Policlinic of Oral and Maxillofacial Surgery of the Technical University Munich, Germany*

³*Charité-Universitätsmedizin Berlin; Center for Septic Surgery*

⁴*Technische Universität München; Institute for Medical Microbiology, Immunology and Hygiene; Institute for Medical Microbiology, Immunology and Hygiene*

Background: The risk of haematogenic prosthetic joint infection (PJI) after dental procedures is discussed controversially. To our knowledge, no study has evaluated infections according to the origin of infection based on the natural habitat of the bacteria. We investigated the frequency of positive monomicrobial cultures involving bacteria from oral cavity in patients with suspected PJI compared to bone and joint infections without joint prosthesis.

Material/methods: In this retrospective study we included all patients with suspected PJI or bone and joint infection without joint prosthesis, hospitalized at our orthopaedic clinic from January 2009 through March 2014. Excluded were patients with superficial surgical site infections or missing data. For microbiology, homogenized tissue and bone specimens, joint aspirates and intraoperative swabs were collected, inoculated onto aerobic and anaerobic agar plates and into broth. Demographic, clinical and microbiological data were collected using a standardized case report form. Groups were compared regarding infections caused by oral bacteria. χ^2 test was employed for categorical variables and t-test for continuous variables.

Results: A total of 1673 patients were included, of whom 996 (60%) had a suspected PJI and 677 (40%) osteoarticular infection without joint prosthesis (control group). In patients with suspected PJI the median age (range) was 67 (10-98) years; 407 (41%) were males. The anatomic location of the prosthesis was hip in 522 (52%) patients, knee in 437 (44%), megaprotheses in 14 (1%), shoulder in

8 (1%) and other prosthesis in 15 (2%) patients. In 437 (44%) of PJI cases pathogen(s) were detected, 271 (62%) were monomicrobial and 166 (38%) polymicrobial. Of 271 monomicrobial infections, 24 (9%) were caused by bacteria belonging to the normal oral flora, predominantly oral streptococci (n = 21). In contrast, only 3 (3%) of monomicrobial infections in the control group without joint prosthesis were caused by oral bacteria. This difference was statistically significant ($p = 0.002$), whereas the patient age ($p = 0.058$) and the anatomic location of the joint prosthesis ($p = 0.622$) did not have any effect on the oral bacteria.

Conclusions: The incidence of infections caused by oral bacteria was significantly higher in patients with joint prosthesis than in other osteoarticular infections (9% versus 3% of infections with single microorganism). This finding indicates that joint prostheses are at risk of haematogenous infections originating from oral cavity. Future prospective studies need to determine the exact risk of haematogenic PJI caused by oral bacteria, as well as the potential of preventing these infections by antibiotic prophylaxis.