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# [O95] DIAGNOSIS OF PERSISTENT INFECTION IN PROSTHETIC TWO-STAGE EXCHANGE: PCR ANALYSIS OF SONICATION FLUID FROM BONE CEMENT SPACERS

**Sandrine Mariaux**[1], Ulrika Furustrand[1], Olivier Borens[1]

[1]University Hospital of Lausanne (Chuv), Service of Orthopedics and Traumatology, Lausanne, Switzerland

**Aim:** When treating periprosthetic joint infections with a two-stage procedure, antibiotic-impregnated spacers are used in the interval between removal of prosthesis and reimplantation. The spacer provides local antibiotics; however, it may also act as foreign-body that can be colonized by microorganisms. According to our experience, cultures of sonicated spacers are most often negative. The objective of our study was to investigate whether PCR analysis would improve the detection of bacteria in the spacer sonication fluid.

**Method:** A prospective monocentric study was performed at Lausanne University Hospital from September 2014 until January 2016. Inclusion criteria were two-stage procedure for prosthetic infection and agreement of the patient to participate in the study. For a two-stage procedure the interval before reimplantation ranged between 2 and 8 weeks. Spacers were made of cement impregnated with gentamycin, tobramycin and vancomycin. Cultures of intraoperative deep tissues samples from first and second stage procedures, prosthesis sonication and spacer sonication were analyzed. Multiplex-PCR*, pan-bacterial PCR (16S), and a Staphylococcus-specific PCR analysis were performed on the sonicated spacer fluid.

**Results:** 23 patients were identified (12 hip, 10 knee and 1 ankle replacements). Initial infection was caused by ***Staphylococcus aureus*** (27***%), Streptococcus epidermidis*** (27%), ***S. dysgalactiae*** (13%), ***S. milleri*** (9%), ***S. pneumoniae*** (4%), ***S. capitis*** (4%), ***S. salivarus*** (4%), ***P. acnes*** (4%), ***E. faecalis*** (4%) and ***C. fetus*** (4%). At reimplantation, cultures of tissue samples and spacer sonication fluid were all negative. Of culture-negative samples, the PCR analyses were negative except for 5 cases. 4 cases of infection recurrence were observed, with bacteria different than for the initial infection in 3 cases. For these cases, no germs were detected in the spacer sonication fluid by neither cultures nor PCR.

**Conclusions:** The 3 different PCR analyses performed did not detect any bacteria in spacer sonication fluid that was culture-negative. In our study, PCR did not improve the bacterial detection and did not help to predict whether the patient will present a recurrence of infection. Prosthetic 2-stage exchange with short interval and antibiotic-impregnated spacer is an efficient treatment to eradicate infection as both culture- and molecular-based methods were unable to detect bacteria in spacer sonication fluid after reimplantation.
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