

O0470 **Biofilm like aggregates in synovial fluid: may use of dithiothreitol increase sensitivity of culture?**

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Background: Diagnosis of prosthetic joint infection is based on culture of synovial fluid, periprosthetic tissues and prosthetic implants. The main advantage of synovial fluid analysis is that it may be performed before surgery, thus providing information useful for definition of surgical approach. Recently, it has been shown that *Staphylococcus aureus* and *Staphylococcus epidermidis* are able to form biofilm like aggregates in synovial fluids. We hypothesized that presence of biofilm like aggregates negatively affects sensitivity of synovial fluid culture and, therefore, use of an agent favoring bacterial release from biofilm might improve sensitivity of culture.

Materials/methods: Synovial fluid from 75 patients with suspected periprosthetic infection were analyzed. One mL of either DTT or normal saline were added to 1 mL of synovial fluid. After agitation and centrifugation, the pellet was resuspended in 0.5 mL of normal saline. 0.1 mL were plated on chocolate agar for colony counts and inoculated in broth. After incubation for 48 hrs colonies grown on agar plates were counted. Broths were incubated for 15 days and daily checked for microbial growth. In case of turbidity, aliquots of 0.1 mL were plated on chocolate agar and Schaedler agar. Frequencies of positive samples were compared by Fisher Exact test, while colonies counts were compared by paired Student t test.

Results: Thirty patients were classified as infected in accordance with criteria established by the International Consensus Meeting of Philadelphia. Microbial growth was observed in 27/30 samples (90%) treated with DTT and in 18/30 (60%) treated with saline ($p=0.015$). In particular, in 9 cases pathogens grew only in DTT treated samples (33.3% of positive samples), while none of the tested samples resulted positive only after treatment with normal saline. DTT led to recovery of significantly higher amounts of bacteria than normal saline ($p= 0.003$).

Conclusions: Results of this study suggest that treatment with an agent characterized by a demonstrated ability to release bacteria from biofilm may increase microbial recovery from synovial fluid. If confirmed by studies on a larger population, DTT treatment of synovial fluid might represent a useful tool to significantly improve sensitivity of culture of synovial fluids.