2nd International Arthroplasty Symposium: The Infected Implant

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This two day conference, which took place in Potsdam, Germany, and was sponsored by Heraeus Medical, was dedicated to looking at the difficult challenge of infected total joint replacements. An international panel of experts in the field gave lectures, debated and held interactive sessions on a wide variety of relevant topics. I was able to have a one-to-one discussion with the chairman and organiser of the symposium, Professor Kienapfel, and discussed his preferred strategies for treating infected implants in a number of different scenarios. It was reassuring to find that his thought processes for treating infected implants were similar to those found in the UK amongst revision surgeons.

The lectures from microbiologists around Europe were the most informative for me. Diagnostic criteria and culture techniques being used within Europe are quite varied. Of interest were the methods employed to try to increase the rate of positive diagnosis for the infected implant - one group were using ultrasound on the removed implants to increase capture rates whilst other groups were using polymerase chain reactions (PCR). Molecular techniques have been shown to be no more specific than culturing though. Most groups agreed that for definitive diagnosis of infection to be made ≥3 independent positive specimens are needed, which usually requires 5 or 6 specimens to be taken from different tissues within the joint. Incubation is recommended to be for 14 days, as of the bacteria found after 14 days' incubation only 30% were detectable at 3 days. It can be difficult to differentiate potential contaminants with long periods of incubation though.

Discussion about biofilms was also highly educational. Cordero-Ampuero, from Spain, described how bacteria can form a biofilm from exopoly-saccharides within 24-48 hours after implantation. This is coordinated by secreted signal molecules from the bacteria, known as 'quorum sensing'. The biofilm allows staphylococci to become sessile, thereby reducing the likelihood of antibiotics being taken up intracellularly (an active process - pinocytosis) and promoting the dissemination of resistance and also forming a nutrient medium for pathogens such as pseudomonas and proteus. Antibiotic resistance within the biofilm is increased up to 1000-fold.

Much of the debate and interactive sessions were centred on the arguments for one- versus two-stage revision, the use of spacers, whether to use cement or not and combinations and duration of antibiotic treatment. One group uses silver coated implants in recurrent problematic infection. These are custom made and extremely expensive and not without risk, however. The systemic level of silver ions needs to be closely monitored and other potentially hepatotoxic and nephrotoxic agents discontinued. One area of disparity was in deciding when to perform the second stage. All agreed that infection needed to be eradicated first but could not agree on how to confirm this. Some would countenance a one month interval between stages and others would wait a minimum of six months. Antibiotic protocols varied from two weeks intravenously only to two weeks intravenously and six months orally. Some of the combinations would, I suspect, not be permitted by our microbiologists for fear of Clostridium difficile. In the interactive sessions the majority of delegates chose to perform two-stage revisions, with a minimum gap of six weeks to second stage and would use uncemented implants. The use of antibiotic therapy alone was reserved for those not fit for revision surgery.

The symposium itself provided a good refresher course on management plans for the treatment of the infected implant and an excellent scientific background from the microbiologists on current knowledge and potential future rationales.

The organisation of the symposium was very efficient and ran commendably to its timeslots. The organisers managed to avoid repetition of topics and the chairmen of the interactive sessions and debates stuck to the topics admirably. I would recommend this conference to BOTA members in future years for its educational content and excellent hospitality.

I would like to thank Heraeus Medical for the opportunity of going to this symposium.