From swab to SEM: Our protocol on tka infection suspicion

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INTRODUCTION: The most feared complication after total knee arthroplasty is deep infection. Successful treatment needs early and good diagnosis preferably based on a microbial analysis, and adequate knowledge on the patient profile. There is no single test that will consistently predict infection. Pathogen detection techniques often are difficult to interpret. False positive results may be caused by contamination, and false negative results often are a consequence of presumptive antibiotics in spite of evidently running infection. The WBC count in the synovial fluid presume the probability of infection, but give no specific information regarding the underlying diagnosis. The purpose of this study was to attempt an algorithm for the diagnosis at the suspicion of TKA infection..

METHODS: We considered all patients with a symptomatic total knee replacement (ex: painful knee or elevated levels ESR & CRP or suggestive bone scan). Shut out the possibility of aseptic loosenig, all patients had undergone pre operative aspiration (culture & WBC count) and specimens (bone & synovial) from any area suspicious for infection, in operating room after sterile skin preparation and draping. No patients received preoperative (two weeks antibiotic wash out) or intraoperative antibiotics. Local anaesthetics were not used because of their bacteriostatic properties. We repeat the procedure until the bacteria detection: if the bacteria were identified , the patient is to undergo (after a proper systemic antibiotic therapy) a two stage revision arthroplasty.
If it is impossible to identify the bacteria, we perform a frozen section. If the results are more than 10 polymorphnuclear leukocytes/high power field we considered the TKA infected and we continue in two stage procedure. Samples obtained from explanted knee prostheses are send for SEM (scanning electron microscope) analysis & sonication procedure.

DISCUSSION & CONCLUSIONS: The diagnosis of infection is a serious problem: often vague symptom & modest inflammatory response with imaging tecnique available that are frequently in difficult to rule out the infection. The light distinction between pathogens & contaminants in the bacteriological cultures and a not standardized procedure sampling surgery biopsies fall through the attempt of a firm diagnosis. We think that our algorithm proposal, may be helpful in judging the probability of infection.

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