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Positive Cultures In Reimplantation Surgery

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Introduction: Infection must be healed in reimplantation surgery when a 2-stage-exchange is used for treatment of a prosthetic joint infection (PJI)

Objectives: 1. Results of intraoperative cultures taken in reimplantation surgery
2. Epidemiology, treatment and clinical evolution of patients with positive cultures

Methods: - Design: Retrospective analysis of a prospectively followed consecutive series of patients
- Inclusion criteria: Chronic PJI (implanted at least 3 months before 1st stage), positive intraoperative cultures in 1st stage, compliant patient with antibiotic treatment
- Exclusion criteria: 2nd stage not performed, inadequate follow-up
- Epidemiology: 51 patients (35 female -68.7%-) with infected PJIs (23 hips, 28 knees) were treated with a 2-stage protocol in our Department by one surgeon from 2002 to 2012
- Treatment protocol: implant-extraction surgery, Girdlestone in hips (no spacer), hand-made spacer in knees (PMMA-gentamicin-clindamycin), combined oral antibiotics (according to intraoperative cultures) along 6 months, clinical and serological monthly follow-up, reimplantation after a variable period when serologic markers are normal, cemented reimplantation with PMMA-gentamicin-clindamycin
- Intraoperative cultures in 2nd-stage: 3-to-6 tissue samples from different locations with the worst macroscopical appearance (at least one from each bone-cement interface and neocapsule)
- Positive cases: 1) any bacterial isolate in primary cultures AND/OR any isolation of usual pathogens in enrichment media AND/OR more than 1/3 or 2/6 samples cultured in enrichment media are positive for usual contaminants (Staphylococcus coagulase-negative, Propionibacterium spp., Corynebacterium spp)
- Cases considered contaminated: all primary cultures are negative but up to 1/3 or 2/6 samples cultured in enrichment media are positive for usual contaminants (Staphylococcus coagulase-negative, Propionibacterium spp., Corynebacterium spp)
- Follow-up: average 5.8 years (1-11), no case lost to follow-up. Prospective clinical, radiological and serological

Results: 1. Negative cases: 30/51 (58.8%)
2. Cases considered contaminated: 12/51 (23.5%)
3. Positive cases: 9/51 (17.6%):
3.1. Female patients: 7/9 (78%)
3.2. Knees: 7/9 knees (78%)
3.3. Polymicrobial cultures: 5/9 (55.6%) in 1st stage, 1/9 (11.1%) in 2nd stage
3.4. Same bacteria isolated in 1st and 2nd stage: 6/9 patients (persistence of infection):
3.4.1. Three methicillin-resistant Staphylococcus epidermidis
3.4.2. Two methicillin-resistant Staphylococcus aureus
3.4.3. One Enterococcus
3.5. New bacteria isolated in 2nd stage: 3/9 patients (new infection?)
4. Treatment of patients with positive cultures in 2nd stage: a 2nd cycle of combined oral antibiotics (according to the new intraoperative cultures) along 6 months
5. Clinical evolution: 1/9 (11.1%) recurrence (this patient suffered 2 consecutive 2-stage exchanges, arthrodesis attempt, and final supracondylar amputation because of associated arteriopathy)

- Conclusions:**
1. The prevalence of positive cultures in reimplantation surgery (2nd stage) is higher than expected with the treatment protocol followed
 2. Positive cultures are more frequent in women, knee arthroplasties and polymicrobial infections
 3. Clinical evolution with treatment applied is good for the moment