

POST-ARTHROSCOPIC SEPTIC ARTHRITIS OF THE KNEE. ANALYSIS OF THE OUTCOME AFTER TREATMENT IN A CASE SERIES

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Introduction

Post operative septic arthritis is an uncommon but potentially severe complication of arthroscopic surgery of the knee. The incidence of septic arthritis after anterior cruciate ligament (ACL) reconstruction has been reported between 0.3% and 1.7%. Despite its low incidence, it is important to recognize this infection early since any delay of its treatment carries an increase of morbidity that results in poor clinical outcome. In literature, the treatment regimen was not standardized. In our study we report the treatment results of a case series of post-arthroscopic septic arthritis and the factors related to outcome.

Materials and Methods

In an observational study we included all cases of post arthroscopic septic arthritis of the knee referred over a 5-year period to our centre for infectious diseases consultation and therapeutic management. Septic arthritis was defined by clinical evidence (fever, local pain, erythema or tenderness), laboratory investigations (leucocytosis, increased ESR and CRP), and by synovial fluid leukocyte count of more than $5,0 \times 10^4/\mu\text{L}$ or by positive cultures obtained by synovial fluid aspirate. Post-operative infections were classified as either acute (<2 weeks), subacute (between 2 weeks and 2 months) or late (>2 months). All the patients underwent laboratory investigations including aspiration of the knee fluid. After diagnosis of septic arthritis was established, patients received antibiotic therapy associated with conservative or surgical treatment. Empirical therapy was based on drugs active against Gram positive multi-drug resistant bacteria. If bacterial growth was obtained by cultures, antibiotic therapy was modified on the basis of microbiological evidence. For cases sustained by staphylococci, treatment with associative regimens containing rifampin was considered. The surgical option consisted of arthroscopic debridement. Cure was defined by persistent normalization of clinical and laboratory investigations 6 months after treatment.

Results

39 patients (median age 25 years, range 17-62, males 77%) with septic arthritis of the knee following arthroscopy were enrolled. ACL reconstruction was performed in 35 cases; four patients were treated for meniscal and cartilage lesion due to degenerative disease. All cases had received pre-operative antibiotic prophylaxis with first-generation cephalosporin. 22/39 (56%) cases were observed within 15 days from the surgical procedure (acute infection) and 17/39 (44%) within 30 days (subacute infection). None had late infection. None had comorbidity. At the time of presentation patients had acutely swollen, tender, red, hot knees with variable signs of general illness: 33/39 (85%) had fever and 38/39 (97%) had pain and swelling. CRP was elevated in 37/39 (95%). One patient presented surgical wound dehiscence. Median synovial fluid leukocyte count was 80710 cells/ μL (range 52735-113000) (Table). *Staphylococcus aureus* was identified in 15 (38%) cases (7 methicillin resistant strains), coagulase negative staphylococci in 8 (20%), *Enterococcus faecalis* in 3 (8%), and *Pseudomonas aeruginosa* in 2 (5%). No microbiologic evidence was found in 11/39 patients (28%).

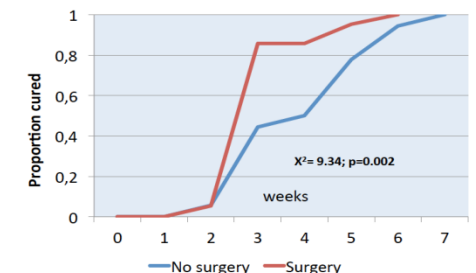
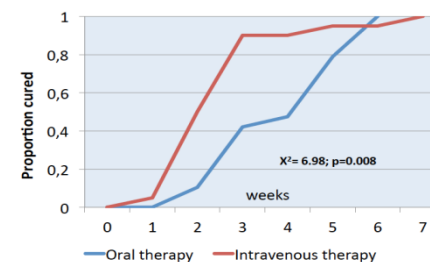
Results

21/39 (54%) patients received arthroscopic debridement followed by antibiotic therapy. One patient underwent graft removal. No difference in outcome was reported in patients undergoing ACL reconstruction treated with debridement respecting non surgical treatment, but pain and swelling resolved within 4 weeks more frequently in those receiving surgery (18/21 vs. 9/18, $p < 0.05$). Rifampin was administered in all patients with staphylococcal isolation but 2 patients withdrew the drug because of side effects. Fever disappearance and CRP normalization within 4 weeks was reported more frequently in patients receiving intravenous antibiotic therapy (17/20 vs. 9/19, $p < 0.05$).

Klapan-Meir estimates highlight the faster resolution of symptoms in those receiving intravenous therapy ($p = 0.008$) or debridement ($p = 0.002$). Median duration of antibiotic therapy was eight weeks (range 6-10). Functional outcome after septic arthritis was favourable in all but 3 of 4 cases with degenerative disease that received indication to undergo total knee arthroplasty due to sequelae.

Table: Findings of the study population

Nr patients	39
Male	77%
Median age yrs (range)	25 (17-62)
LCA reconstruction	35
Meniscal lesions	4
Acute	22 (56%)
Subacute	17 (44%)
Fever	33 (85%)
Pain and swelling	38 (97%)
Elevated CRP	37 (95%)
Median synovial fluid leukocyte cells/ μL	80710 (52735-113000)
Positive microbiological culture	28 (72%)
Debridement	21 (54%)
Median duration of therapy (weeks)	8 (6-10)



Conclusions

We reported a large series of patients affected by post-arthroscopic septic arthritis of the knee. Early diagnosis and timely treatment may improve eradication of the infection without sequelae in those undergoing ACL reconstruction with retention of graft. Intravenous antibiotics and debridement were associated to faster resolution of symptoms and inflammatory markers normalisation. Patients with degenerative disease of the knee undergoing meniscectomy reported poor functional outcome despite early treatment.