

Pyogenic Arthritis of The Knee: Management and Evaluation of Results

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Introduction

Pyogenic septic arthritis of the knee, or joint inflammation of the knee of bacterial origin, is a frequent and serious condition. It often leads to stiffening or even complete ankylosis if left untreated [1]. Knee arthritis is very often seen in children, the average age of onset being six years [2].

Today, the pathophysiology and clinical course of arthritis are well known, and its medical and surgical treatment well codified. In industrialized countries, the functional prognosis of arthritis has improved considerably, thanks to the recent possibilities of early diagnosis in the acute phase through extemporaneous bacteriological examination of samples, as well as the use of ultrasound and scintigraphy [3].

Despite these advances, knee arthritis remains a concern for both patient and practitioner in developing countries. Delays in consultation are linked to ignorance, low parental financial resources and late diagnosis by personnel. The serious and disabling after-effects remain formidable, especially in growing children. This pathology has been the subject of several publications, not only for its frequency, stereotype and occurrence in specific areas, but above all for the therapeutic difficulties it poses [4-8].

The aim of this study was to highlight the epidemiological, clinical and therapeutic aspects of pyogenic septic arthritis of the knee in our department.

Material and Methods

Our study focused on patients with pyogenic septic arthritis of the knee. It was a continuous descriptive study from January 1, 2010 to December 31, 2014, a period of 4 years, carried out in the Orthopedics-Traumatology Department of the Hôpital National Ignace Deen.

Patients hospitalized, treated and followed-up for pyogenic septic arthritis of the knee were included in our study. All patients hospitalized and treated for other causes of arthritis (white tumor of the knee, septic articular wound of the knee, arthritis of the knee on osteosynthesis material) were excluded from our study.

Study variables were epidemiological (frequency, age, sex, etiology and length of hospital stay), clinical (reason for consultation, antecedents, terrain), paraclinical (standard front and side radiographs of the knee, haemoglobin level, blood grouping and rhesus factor, bleeding time, coagulation time, creative reative protein, sedimentation rate, cyto bacteriological examination of pus, retroviral serology, Hbs antigen) and therapeutic.

We have classified knee arthritis into 4 stages:

- **Stage I:** a large, painful, febrile knee, cloudy joint puncture fluid, standard x-ray showing no osteochondral lesions.
- **Stage II:** large, febrile, painful knee, purulent joint puncture fluid, standard x-ray showing no osteochondral lesions.
- **Stage III:** fistula or global pinch on X-ray.
- **Stage IV:** presence or absence of fistula, global pinching, osteochondral erosion on standard radiograph.

Antibiotic therapy was directed for some patients and probabilistic for others. We divided our patients into two groups according to the stage of arthritis of the knee: group I comprised stages I and II, and group II comprised stages III and IV.

Treatment was performed on an emergency basis. Treatment consisted of puncture-washing and plaster splinting for group I, and medial parapatellar arthrotomy and plaster splinting for group II. The first dressing was applied on postoperative day 1, and the sutures were removed on postoperative day 21 (group II).

Monitoring parameters were: surgical wound status, local heat, CBC, CRP, VS and control radiograph. We evaluated 40 patients with a mean follow-up of 20 months, the extremes being 3 months and 60 months.

Our results were assessed according to the functional criteria we defined:

- **Very good:** no swelling, no pain, functional knee movement preserved (flexion at 140° and extension at 0°), knee stability preserved.

- **Good:** no pain, limited knee stiffness (flexion > 90°, extension deficit 5°), knee stability preserved, moderate swelling.
- **Poor:** permanent pain, persistent tumefaction, flexion < to 90°, or persistent supination.

Our data were entered using Word and analyzed using Epi info software version 7.2.

Results

From a total of 301 hospitalized patients, we identified 59 cases (19.6%) of pyogenic septic arthritis of the knee. The mean age of our patients was 24 years, with extremes of 1 and 59 years. The 31-40 age group was the most affected (30.51%). Males were most affected (79.66%), with a sex ratio of 3.9. Pupils and students were the main victims, with 21 cases (35.59%). Painful febrile swelling was the most common reason for consultation, 43 cases (72.88%). We observed 2 cases of H.I.V. 3 cases of sickle cell disease and 4 cases of diabetes. We noted two types of portal of entry: superficial traumatic wounds in 55 cases (93.22%) and intertrigo in 4 cases (6.78%). Of the 39 patients who underwent cytobacteriological examination of the pus, we noted 22 cases (56.41%) of staphylococcus aureus. We obtained 8 cases (13.56%) in stage I, 48 cases (81.35%) in stage II and 3 cases in stage III.

Medial parapatellar arthrotomy was performed in 49 patients (83.05%). Hospital stays of 5 - 21 days were most frequent, in 26 cases (44.06%), with an average stay of 11 days, and extremes of 5 days and 55 days. Our results were judged Very Good in 12 cases (30%), Good in 18 cases (45%) and Poor in 10 cases (25%).

Age group / gender	Male	Female	Percentage(%)
1 – 10 years	3	2	5 (8.41%)
11 – 20 years	5	2	7 (11.86%)
21 – 30 years	11	3	14 (23.73%)
31 – 40 years	16	2	18 (30.51%)
41 – 50 years	9	2	11 (18.64%)
51 – 60 years	3	1	4 (6.78%)
Total	47	12	59 (100%)

Table 1: Age and gender distribution.

Germes	Workforce	Percentage(%)

Staphylococcus aureus	22	56.41
Streptococci	10	25.64
E. coli	2	5.12
Pneumococcus	5	12.82
Total	39	100

Table 2: Distribution by germ.

Type of treatment/ Stages	Stage I	Stage II	Stage III	Percentage(%)
Puncture-Wash	8	2	0	10 (16.95%)
Arthrotomy	0	46	3	49 (83.05%)
Total	8	48	3	59 (100%)

Table 3: Distribution by type of treatment and stage.

Treatment results	Very good	Good	Wrong	Percentage(%)
Puncture-wash	4	3	3	10 (25%)
Arthrotomy	8	15	7	30 (75%)
Total	12	18	10	40 (100%)

Table 4: Distribution by type of treatment and outcome.

Discussion

Pyogenic septic arthritis of the knee accounted for 19.6% of hospitalizations in the Orthopedics-Traumatology Department of the Hôpital National Ignace Deen during the study period [5] reported 41 cases [4] recorded 80 cases of knee arthritis out of 12,205 hospitalizations, i.e. 0.52% in 3 years.

This relatively high frequency in our series could be explained by neglect and poor management of cutaneous-mucosal infections, which are the main gateways of entry (treatment in traditional medicine). The 31-40 age group was the most vulnerable (30.51%), followed by the 21-30 age group (23.73%). The average age of our patients was 24 years, with extremes ranging from 1 to 59 years [4] reported a predominance in the 21-30 age group, with a mean age of 26 [7] on the other hand, showed a strong predominance during the first 4 years of life.

Our structure being an adult department would explain the high frequency of this age group, although we also take care of traumatological and orthopedic pathologies in children. In our study, both sexes were affected, with a male predominance of 79.66% and a sex ratio of 3:9. This predominance has been observed by several authors [2, 8,9]. These results can be explained by the neglect of the management of traumatic wounds, which are often considered benign.

The portal of entry was cutaneous (traumatic wounds and intertrigo), and the most frequent germ was staphylococcus aureus in 22 cases (56.41%). This prevalence is confirmed by authors [1, 4]. Painful febrile swelling was the most frequent symptom (72.88%). The telltale symptom of pyogenic septic arthritis of the knee is a painful syndrome associated with functional impotence and in a febrile context [5] found 62 cases of pain with febrile swelling.

On the other hand, for [8] although pain was present in 41.4% of cases, it was moderate and not accompanied by functional impotence in 50.8% of cases. In our study, we obtained 4 cases of diabetes, 3 cases of sickle cell disease and 2 cases of HIV. Patients' reduced immunity and poorly treated pathways expose them to infections of all kinds.

Treatment was medical and surgical. Targeted (39 cases) and probabilistic broad-spectrum antibiotic therapy (ceftriaxone + imidazole or amoxicycline + clavulanic acid), analgesics and plaster cast immobilization were systematic. According to the recommendations of the British Society Rheumatology [9], acute (mono) arthritis should be considered septic arthritis until proven otherwise. If clinical suspicion is strong, even in the absence of fever and isolated germs, antibiotic therapy should be started [10].

We performed medial parapatellar arthrotomy in 49 of our patients (83.05%) [2] have shown that the treatment of osteoarticular infections should be based on clinical suspicion, after taking the necessary bacteriological samples, and on massive, synergistic antibiotic therapy with good diffusion and tolerance.

According to [7] medical treatment alone can cure 80% of acute osteoarticular infections. Delayed consultation, responsible for chronicity (stages II and III), explains the use of surgery (arthrotomy) in our study. We evaluated 40 patients with a mean follow-up of 20 months, the extremes being 3 months and 60 months. Our results were considered very good and good in 75% of cases.

Conclusion

Pyogenic septic arthritis of the knee, which is more common in younger people, remains a frequent and serious condition, despite the progress made in the medical and surgical field, and the transition to chronicity is the result of late consultation.

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