

Chronic Pandiaphysity with Chronic  
OsteomyelitisLamine Sarr<sup>1\*</sup>, Badara Dembélé<sup>1</sup>, Daffé Mouhamed<sup>1</sup>, Diouf Alioune Badara<sup>1</sup>, Souleymane Diao<sup>2</sup>, Alioune Badara Gueye<sup>3</sup>, Joseph Diouf<sup>2</sup>, Idris Nguessie Noubou<sup>1</sup>, Ndeye Fatou Coulibaly<sup>1</sup> and Charles Diémé<sup>1</sup><sup>1</sup>Department of Orthopedics-Traumatology, Hospital Aristide Le Dantec-Dakar, Sénégal<sup>2</sup>Department of Orthopedics-Traumatology, Grand Yoff General Hospital-Dakar, Sénégal<sup>3</sup>Ordre of Malte hospital Center, Dakar, Sénégal

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## Abstract

**Introduction:** Pandiaphysitis is a particular form of chronic osteomyelitis by the extent of infection on the diaphysis but also the risk of complications. It is disabling, tenacious, potentially life-threatening and is common in our developing countries where it is a public health problem.

**Objective:** To describe the anatomo-clinical and therapeutic aspects of pandiaphytes in the orthopedic and trauma department of a low-income country.

**Material and method:** This is a retrospective study from January 2009 to December 2016. We included patients treated in the department and whose file was complete.

**Results:** We collected 29 cases of pandiaphysitis. The average age was 23.69 years old. There was a clear predominance of the male sex with a ratio of 3.83. The only land found was sickle cell disease (4 cases). Bloodborne infections were predominant. The consultation period ranged from 1 to 33 years. The preferred seat was the lower limb with 65.52% of cases. On radiography, the sequestering form was the most represented. The staphylococcus aureus germ was the most represented organ (75% of patients). Antibiotic medical treatment was systematic (patients being received at the pushing stage). Surgical treatment was done in 25 patients. After evaluation, we had 44.83% favorable evolution. Complications and sequelae have been observed: recurrence, unequal limb length, deformities and one case of death.

**Conclusion:** Pandiaphysitis is a serious pathology, causing multiple sequelae that negatively impact the quality of life of patients. Acute outbreaks can cause fatal sepsis.

## Introduction

Chronic pandiaphysitis is an infection of the bone and extended bone marrow on the diaphysis of a long bone evolving chronically. It follows osteomyelitis with a particularly virulent germ or poorly managed osteomyelitis. It is at the origin of structural modifications of the bone which can have consequences on the quality of this one but also repercussions on the adjacent functions.

The aim of this work is to describe the clinical aspects of chronic pandiaphytes and their treatment.

## Material and Methods

This is a continuous retrospective study over 84 months (from January 2009 to December 2016) in the orthopedic traumatology department of Aristide le Dantec hospital in Dakar. During this period, 29 cases of pandiaphytes followed were included on the 169 chronic osteomyelitis or 17.16%. The average age of our patients was 23, 69 years old with extremes of 16 and 52 years old. There were 23 men and 6 women.

We established a record of exploitation on which we collected the clinical, therapeutic, complications and evolution data during the follow-up.

## Results

## Clinical results

Tumefaction with fistula was the most frequently found reason for consultation (17 cases) (Figure 1). Chronic wounds were found in four cases and pain was present in 15 patients.

The contamination was haematogenous in 20 patients or 68.96%. Contiguity contamination involved 9 patients.

Four patients were sickle cell patients (three heterozygotes and one homozygote). Retroviral serology in ten patients was negative in all these patients.



**Figure 1:** Overall swelling of the leg associated with the presence of fistulas during pandiaphysitis.

The average consultation time is 60 months. The distribution according to the consultation period is represented by Table 1.

The bone involvement involved the long bones of the pelvic limb in 79.31% of cases. The distribution according to the bone reached is shown in Table 2.

The bone involvement involved complete diaphysis without metaphyseal involvement in 14 patients. The metaphyseal extension involved 5 patients and the epiphyseal involvement was noted for 10 patients with three cases of ankylosis (two hips and one elbow). The radiological image is that of a hypercondensation with sometimes presence of geodes. The presence of sequestration was noted in 21 patients (Figure 2).

**Bacteriology**

**We isolated a germ in 14 patients:**

- Staphylococcus would have (12 times);
- Mirabillis Proteus (1 time);
- Klebsiella pneumoniae (1 time).

**Table 1:** Distribution of patients according to consultation time.

Consultation Time	Effective	Percentage
Under 5 years old	5	17,24
5 -10 years old	6	20,68
10-15 years old	3	10,34
More than 15 years old	15	51,71
<b>Total</b>	<b>29</b>	<b>100</b>

**Table 2:** Distribution of patients according to the bone reached.

Bone	Location	Effective	Percentage
<b>Pelvis limb</b>	Fémur	12	41,38
	Tibia	7	24,14
	Fibula	4	13,79
<b>Thoracic member</b>	Humerus	6	20,69
<b>Total</b>		<b>29</b>	<b>100</b>

**We have a germ association in 3 patients**

- Staphylococcus aureus + streptococcus;
- Staphylococcus aureus + pseudomonas aeruginosa;
- Salmonella + eschrichia coli.

**We had an absence of germ in 8 patients:** Collection for bacteriology was not possible for patients who had pain without obvious collection

**Biology**

**The blood count performed in 28 patients showed:**

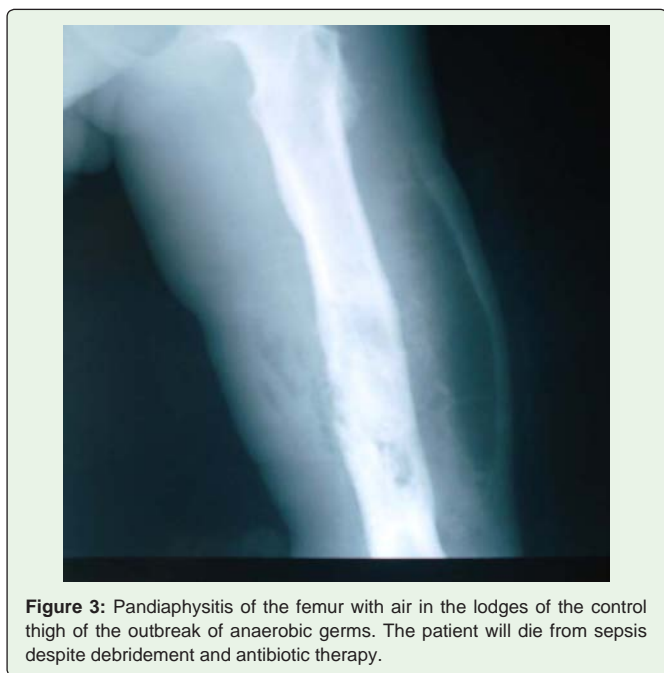
- Microcytic anemia in 13.8% of patients
- Neutrophil leukocytosis in 6 patients
- SV was performed in all patients. It was increased in 20 patients or 69%
- CRP was increased in 22 patients or 75.8%

**Treatment**

Medical treatment was instituted in all patients while surgical treatment was done in 25 patients.



**Figure 2:** Pandiaphysitis of the tibia with presence of third proximal sequestration.



**Figure 3:** Pandiaphysitis of the femur with air in the lodges of the control thigh of the outbreak of anaerobic germs. The patient will die from sepsis despite debridement and antibiotic therapy.

**Medical treatment**

All the patients had a medical treatment, at first probabilistic and secondarily adapted to the antibiogram (Figure 3).

**Bioantibiotherapy was done in 5 patients:**

- 3 times amoxicillin combination clavulanic acid and lincomycin
- Once amoxicillin clavulanic acid ciprofloxacin
- And once amoxicillin ac clavulanic and oxacillin

Monoantibiotherapy with lincocine 500 mg x 2 or amoxicillin clavulanic acid 1g two or three times daily.

The duration of treatment depends on the patient. It is prolonged until normalization of clinical signs and biological parameters.

**Surgical treatment:** Surgical treatment was instituted in 25 patients, ie 86.20; among them 9 have been operated too many times; 11 twice and 5 patients once. The surgery associated several gestures according to the lesions:

- 21 sequestrectomies
- 16 bone curettage
- 10 fistulectomies
- 3 hemidiaphysectomies

Other procedures such as MOS removal, soft tissue abscess debridement, bone loss coverage flaps, and bone grafts were performed.

**Complications**

The evolution is marked by the occurrence of several complications (Table 3).

**Table 3:** Distribution of complications.

Complications	Effective	Percentage
Bone deformation	4	19,04
Fracture	1	4,76
Death of sepsis	1	4,76
Ankylosis	3	14,29
Inequalities in length of members	7	33,33
Joint stiffness	5	23,82
<b>Total</b>	<b>21</b>	<b>100</b>

**Discussion**

Definition extended infection of the diaphysis of a long bone is known as pandiaphysitis. It then concerns 3/4 of the diaphysis. Kamoun et al [2] associate this definition with the attack in the month of a metaphysis. This definition is understood in the child or the beginning of the infection is generally metaphyseal with diaphyseal involvement secondary to the virulence of the germ and to the delay diagnosis. On the other hand, in the adult, where the primary involvement can be diaphyseal, this metaphyseal involvement may be absent in authentic pandiaphysitis.

**Clinical**

The delay of late consultation is related to the chronic aspect of the pathology. Pandiaphysitis like the WTO evolves in a chronic mode with a germ that remains quiescent even in case of clinical cure of the adage which says “osteomyelitis of one day, osteomyelitis forever”. The patients therefore in case of evolutionary recovery do not hesitate to consult another doctor from where the sometimes long delay of the first consultation. The clinical picture is that of an evolutionary thrust of an OMC with pain, productive fistula with discharge of a pus franc, swelling as reported by Traoré [6] and Diémé [1]. On the other hand, in pandiaphysis of the bones of the leg or forearm, the swelling is global related to the superficial position of the bones in these limb segments. Sometimes patients consult for low-intensity chronic pain, with biological parameters of normal monitoring. The frequency of these progressive episodes is at the origin of many surgical interventions in his patients (69% of our patients were operated at least twice).

**Complications**

The involvement of growth cartilages and pathological fractures cause epiphysiodesis with limb length inequalities or bone deformities responsible for axis defects. These complications are noted in 37.9% of our patients while they are 31.25% in Kamoun [2] and 9.1% in Souna [5]. The shortening of the lower extremity reached may exceed 10 cm in early infections. It poses a problem of management because the lengthening on this bone sclerous, poorly vascularized with a quiescent germ is not possible.

Joint involvement resulted in stiffness (17.2%) or ankylosis (10.3%). these complications are also found by other authors [2,5]. Fractures are related to the low mechanical strength of this sclerotic bone. They pose the problem of their management because of the precarious vascularization of the bone but also the risk of infectious awakening.

We have noted a case of death in our sepsis series after acute thrombosis of a femur pandiaphysitis that has been evolving for 20 years. They are often very virulent strains of staphylococcus toxin-producing diagnostic sometimes difficult [3]. The management of this type of patient requires multidisciplinary collaboration.

### Treatment

The treatment aims to stabilize the progressive outbreaks of this chronic infection. The medical treatment consists in the taking of analgesics during the painful crises often witness of evolutionary recovery, of antibiotics when the germ is identified.

Surgery is done in sequestering, fistulized, or abscessed forms. It consists of a sequestrectomy, fistulectomy, evacuation of abscess or corticotomy curettage of the bone canal to obtain a state of clinical quiescence. In some tibial pandiaphytes without joint involvement, a tibial resection with peroneal graft can be performed [4].

### Conclusion

Chronic pandiaphysitis is the cause of major functional problems with negative impact on the quality of life of patients. Deaths from sepsis are rare.

Prevention involves the correct management of acute osteomyelitis but also infections of the operative site.

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