

# Septic Arthritis of the Hip in Lome (Togo)

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**How to cite this paper:** Tagbor, K.C., Koffi-Tessio, V.E.S., Kakpovi, K., Houzou, P., Fianyo, E., Oniankitan, S., Atake, A.-E., Kamkote, P., Amegan-Aho, K.H., Oniankitan, O. and Mijiyawa, M. (2021) Septic Arthritis of the Hip in Lome (Togo). *Open Journal of Rheumatology and Autoimmune Diseases*, 11, 97-105.

<https://doi.org/10.4236/ojra.2021.113012>

**Received:** April 23, 2021

**Accepted:** June 27, 2021

**Published:** June 30, 2021

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## Abstract

**Objectives:** To determine the epidemiological, clinical, and bacteriological characteristics of septic arthritis of the hip (SAH) among patients hospitalized in the departments of Rheumatology in Lomé. **Patients and Methods:** This was a multicentre, descriptive study, conducted over a 16-year period, from January 2004 to December 2020 on patients' records at the three departments of Rheumatology in Lomé. We included in this study only patients with complete laboratory and radiological data. Patients who underwent hip replacement surgery and those with arthritis of the hip due to all inflammatory arthropathies were excluded. The diagnosis of SAH was based on clinical, radiological and bacteriological features. In the absence of bacteriological confirmation, the presumptive etiological diagnosis was based on epidemiological data, contacting with a person with tuberculosis, the presence of high-grade fever, the mode of presentation of the symptoms, the patient's general appearance, and the result of the tuberculin skin test. The data was collected using Epi info 7.0 and statistical analysis was performed using STATA/IC 11.0. **Results:** Out of 3776 patients hospitalized in the three departments over the study period, 705 (18.67%) were diagnosed with septic arthritis of which 70 (9.92%) patients with SAH. The 70 patients with SAH were 44 (62.86%) females, and 26 (37.14%) males, with a sex ratio of 1.7 F/M. The mean age of the patients was  $42.43 \pm 19.37$  years (range: 5 years and 80 years) and the mean duration of symptoms was  $6.57 \pm 8.85$  months (range: 2 days and 48 months). The pain was inflammatory in nature in 46 (65.71%) and mechanical in nature in 24 (34.29%) patients. The onset of the disease was progressive in 50 (71.43%) patients and sudden in 20 (28.57%) patients. The locations of the pain were: groin only 25 (35.71%), greater trochanter only 15 (21.43%), groin and lower back 14 (20%), and groin and greater tro-

chanter 9 (12.86%). Sixty-four patients (91.43%) were limping and only six (8.57%) were crippled. Weight loss was noted in 38 (54.29%) patients. A risk factor was identified in 63 (90.00%) patients; they were chronic alcohol abuse 24 (34.29%), poor hygiene 17 (24.29%), sickle cell disease 13 (18.57%), HIV infection five (7.14%), and diabetes four (05.71%). Radiologic features suggestive of SAH were seen on plain radiograph and computed tomography in 55 (78.57%) and 15 (21.43%) patients, respectively. The SAH was unilateral (48 right hip and 20 left hip) in 68 (97.14%) patients and bilateral in two (02.86%) patients. The diagnosis of SAH was probable tuberculosis in 46 (65.71%) patients and probable pyogenic bacteria in 24 (34.29%) patients. The outcome was favourable in 68 (97.14%) patients and two (02.86%) patients died. **Conclusion:** The hip remains a relatively rare localization of infectious pathologies. Most cases of SAH are due to tuberculosis.

## Keywords

Septic Arthritis, Hip, Togo, Africa

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## 1. Introduction

Septic Arthritis of the Hip (SAH) refers to the infection of the synovial membrane of the hip joint [1] [2]. This excludes post-infectious arthritis and reactive arthritis [1] [2] [3]. In western countries, the main causative agents of SAH are bacteria, mostly *Staphylococcus aureus* [1]. The infection can result from hematogenous spread of the microorganism (primary SAH) [2] but in most cases, SAH is iatrogenic due to direct inoculation of the causative organism during intraarticular procedures [1] [2]. Infection of prosthetic joints can result from either direct inoculation or hematogenous spread [1]. Reports on Primary SAH are very rare in international literature and most are from Western countries [1]. In 1979, Rampon *et al.* reported 10 cases over eight years [3]. Evrard and Soudrie [2] in 1993 published 44 cases observed in 40 years and in 1981, 93 cases, representing 16% of peripheral septic arthritis, were recorded in 16 departments of rheumatology in a multicentre study [4]. African data on SAH are scarce. In Togo, a hospital-based study conducted in the northern region estimated SAH at 5.81% of osteoarticular infections [5]. The aim of this study is to determine the epidemiological, clinical, and bacteriological characteristics of septic arthritis of the hip (SAH) among patients hospitalized in the departments of Rheumatology in Lomé.

## 2. Patients and Methods

This is a multicentre, descriptive study based on patients' hospital records covering a 16-year period, from January 2004 to December 2020, conducted in the three departments of rheumatology (the Sylvanus Olympio Teaching Hospital; the Regional Hospital of Lomé and the Bè Hospital) all located in Lomé, the capital of Togo (West Africa). Socio-demographic, clinical, bacteriological, and radiological data were available in the patient's folders. We included in this

study only patients with complete laboratory and radiological data. We excluded patients with the following conditions: hip replacement surgery; avascular necrosis of the femoral head; symptomatic arthritis of the hip due to rheumatoid arthritis, spondyloarthropathy, neuropathic arthropathy, or seronegative arthritis; malignancy, and rapidly destructive osteoarthropathy of the hip. The diagnosis of SAH was mainly based on clinical and radiological features. Infection is confirmed in case of positive culture results or typical histopathological features. Infection is probable in case of strong clinical suspicion such as good response to antibiotic therapy and the presence of at least three of the following: fatigue, anorexia, weight loss and anaemia. Plain X-ray, Full Blood Count (FBC), Erythrocyte Sedimentation Rate (ESR) and Human Immunodeficiency Virus (HIV) serology were systematically performed in all patients. Fever was defined as any body temperature above 37.5° Celsius and leucocytosis as a White Blood Cells (WBC) count above 11,000/mm<sup>3</sup>. An ESR of more than 20 mm per hour was considered raised. Computed tomography scan (CT scan) was done in patients with no obvious signs of infection on plain X-ray. Magnetic resonance imaging was not performed in any of the patients. Neither synovial biopsy nor arthrocentesis were performed. In the absence of bacteriological confirmation, the presumptive etiological diagnosis was based on socio-demographic data, contact with a person with tuberculosis, the presence of high-grade fever, the mode of onset, the patient's general appearance, and the positivity of the tuberculin skin test. Patients with probable tuberculosis SAH received anti-tuberculosis drugs for 12 months, while those with bacterial SAH received a triple broad spectrum antibiotic therapy for two months. Upon hospital discharge, patients were followed-up once monthly. The data was collected using Epi info 7.0 and statistical analysis was performed using STATA/IC 11.0.

### 3. Results

Out of 3776 patients hospitalized in the three departments over the study period, 705 (18.67%) were diagnosed with septic arthritis of which 70 (9.92%) patients with SAH. The 70 patients with SAH were 44 (62.86%) females, and 26 (37.14%) males (**Table 1**), with a sex ratio of 1.7 F/M. The mean age of the patients was 42.43 ± 19.37 years (range: 5 years and 80 years) and mean duration of symptoms was 6.57 ± 8.85 months (range: 2 days and 48 months). The pain was inflammatory in nature in 46 (65.71%) patients (**Table 2**) and the onset of the disease was progressive in 50 (71.43%) patients. The pain was localized to the right hip of 48 (68.57%) patients, to the left hip of 20 (28.57%) patients and bilateral of the two (2.86%) others. Sixty four patients (91.43%) were limping and six (8.57%) were crippled. Weight loss was noted in 38 (54.29%) patients.

A risk factor was identified in 63 (90.00%) patients. They were chronic alcohol abuse (34.29%), poor hygiene (24.29%), sickle cell disease (18.57%), HIV infection (7.14%), and diabetes (05.71%). The mean body mass index was 21.95 ± 4.07 kg/m<sup>2</sup> (range: 15.94 kg/m<sup>2</sup> and 30.66 kg/m<sup>2</sup>). The average admission temperature was 37.74° ± 0.33° Celsius (range: 36.6° Celsius and 37.9° Celsius). The

mean ESR was  $73.96 \pm 34.51$  mm/hr (range: 15 mm/hr and 150 mm/hr). The mean haemoglobin level was  $10.78 \pm 2.27$  g/dl (range: 4.4 g/dl and 14.2 g/dl). The mean WBC count was  $8651.03 \pm 6271.81/\text{mm}^3$  (range:  $2600/\text{mm}^3$  and  $35,500/\text{mm}^3$ ). The mean platelet cells count was  $245,687 \pm 140,364.21/\text{mm}^3$  (range:  $280,000/\text{mm}^3$  and  $569,000/\text{mm}^3$ ). The mean C-reactive protein was  $19.5 \pm 18.63$  mg/l (range: 6 mg/l and 48 mg/l). The HIV serology was positive in five (7.14%) out of the 70 patients. The mean serum creatinine was  $9.96 \pm 2.87$  mg (range: 6 mg and 17 mg). The average fasting blood sugar was  $0.88 \pm 0.14$  g/l (range: 0.62 g/l and 1.17 g/l). Radiologic features suggestive of SAH were identified on plain X-ray (**Figure 1**) in 55 (78.57%) patients and on CT scan (**Figure 2**) in 15 (21.43%) patients. The diagnosis of SAH was probable tuberculosis in 46 (65.71%) patients and probable pyogenic bacterial in 24 (34.29%) patients. All the 46 (65.71%) patients with probable tuberculosis successfully completed twelve months of anti-tuberculosis therapy with no mortality; while two (8.33%) of the 24 patients with bacterial SAH, died before completion of the 2 months triple broad spectrum antibiotic therapy. The outcome was therefore favourable in 68 (97.14%) patients.

**Table 1.** Socio-demographic data of patients with septic arthritis of the hip.

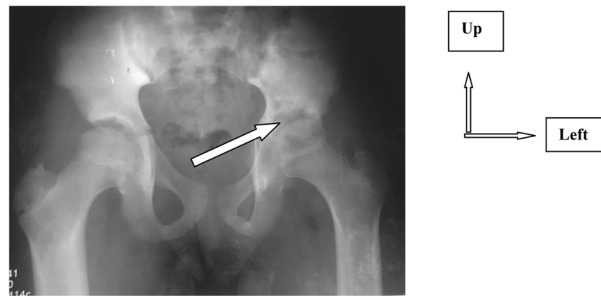
Characteristics	Number of patients	Percentage
<b>Sex</b>		
Female	44	62.86
Male	26	37.14
<b>Residential area</b>		
Urban	46	65.71
Rural	24	34.29
<b>Occupation</b>		
Trader	35	50.00
Unskilled worker	16	22.86
Student	9	12.86
Civil servant	6	08.57
Farmer	4	05.71

**Table 2.** Distribution of patients according to clinical signs.

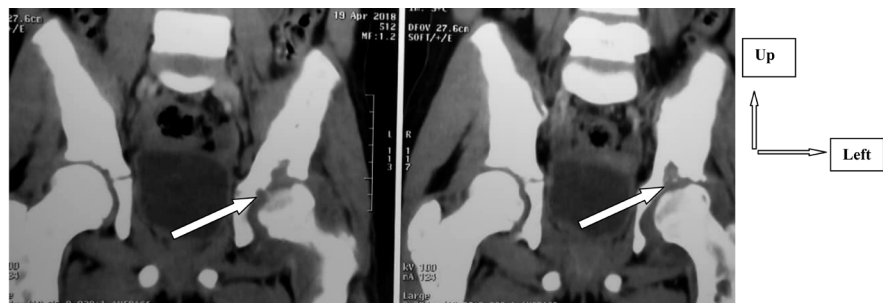
Reasons for the consultation	Number of patients	Percentage
Groin pain only	25	35.71
Great trochanter pain	15	21.43
Groin and low back pain	14	20.00
Groin and great trochanter pain	9	12.86
Groin and buttock pain	7	10.00
<b>Onset</b>		
Progressive	50	71.43
Sudden	20	28.57

## Continued

<b>Characteristics of the Pain</b>		
Inflammatory	46	65.71
Mechanical	24	34.29
<b>Hip joint involved</b>		
Right	48	68.57
Left	20	28.57
Bilateral	2	2.86
<b>Limping</b>		
Yes	64	91.43
No	6	8.57
<b>Referred Pain to the thigh</b>		
Yes	42	60
No	28	40
<b>Fever</b>		
Yes	23	32.86
No	47	67.14
<b>Weight loss</b>		
Yes	38	54.29
No	32	45.71
<b>Infection entry point</b>		
Yes	0	0
No	70	100
<b>Tuberculosis contact person</b>		
Yes	0	0
No	70	100
<b>General Appearance</b>		
Ill	48	68.57
Well	22	31.43
<b>Amyotrophy of the quadriceps</b>		
Present	48	68.57
Absent	22	31.43
<b>Ankylosis</b>		
Right	48	68.57
Left	20	28.57
Bilateral	2	2.86
<b>Lower limb shortening</b>		
Present	53	75.71
Absent	17	24.29
<b>Lumbar syndrome</b>		
Present	55	78.57
Absent	15	21.43



**Figure 1.** Anterior posterior radiograph of patient suffering from tuberculosis arthritis of the left hip with the joint space narrowing, and progressive bone erosion changes of both the left femoral head and the cortex of the acetabulum (white arrow).



**Figure 2.** Computed Tomography of patient suffering from pyogenic bacterial arthritis of the left hip with erosion and narrowing of the joint space (white arrows).

#### 4. Discussion

We reported only 70 cases of SAH over a 16-year period, representing 9.92% of infectious arthritis in rheumatology practice in Lome. This confirms the fact that infection of the hip joint is rare despite the high prevalence of infectious diseases in Africa [6] [7]. The above study, because of its shortcomings (hospital recruitments, narrowness of the technical platform) cannot be generalized to the whole Togolese population. Patients with septic arthritis are classified into three categories regarding definite diagnosis [8]: 1) those in whom a causative organism has been isolated from the synovial fluid; 2) those in whom a causative organism has been isolated remotely from the blood or from the swab of the infection entry point; and 3) those in whom no causative organism could be identified but whose clinical, laboratory markers of systemic inflammation and imaging data suggest a probable diagnosis, in particular fever, risk factors, absence of crystals in the synovial fluid, systemic inflammatory response syndrome, radiological features and complete response to empirical antibiotic therapy [9] [10] [11] [12]. All our patients were diagnosed with probable SAH since no germ was isolated due to limited laboratory support and antibiotic therapy prior to referral to our facilities [5] [13].

The mean age of 42, 43 years in our series is in keeping with reports from West African countries regarding the preponderance of septic arthritis in the fourth decade of life [14] [15] [16] [17]. This is in contrast with reports from

Western countries, where septic arthritis mostly occurs in people in their sixties [17]. The relatively young age of the patients in our series could be explained by the demographic pattern of the African population as compared to that of Western countries, where most cases of SAH occur after hip replacement in elderly people [18] [19] [20] [21] [22].

There was a delay to SAH diagnosis in our series with a mean duration of symptoms of 6.57 months. Similarly, significant delay has been observed in the diagnosis of septic arthritis irrespective of the joints involved in many series [5] [13] [23] [24].

Alcohol abuse was the commonest risk factor (34.29%) in our series, followed by poor hygiene (24.29%) and sickle cell disease (18.57%). Poor hygiene is an important risk factor for septic arthritis in most African series [5] [17] [23] [25] [26]. Continuous education on good hygiene and sanitation should be undertaken among African population.

Tuberculosis is responsible for 65.71% of SAH in our series. This is similar to results from other West African series [5] [16] [23] [26] and is in contrast to Western literature where bacteria causes were most common [1] [20] [22]. Tuberculosis is endemic in Sub-Saharan Africa but almost inexistant in Western countries where joint infections are secondary to manipulation during arthroplasties [1]. Campaign for the prevention and towards eradication of tuberculosis must be intensified on the African continent.

## 5. Conclusion

The hip remains a relatively rare localization of infectious pathologies. SAH preferentially affects young patients; and chronic alcohol abuse, poor hygiene and sickle cell disease are the most common risk factors in our series. Most cases of SAH are due to tuberculosis.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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