

Epidemiological and Diagnostic Features of Non-Traumatic Gonalgia in Adults in Bouake (Ivory Coast): About 140 Patients

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Abstract

Background: Non traumatic gonalgia is the second most common reason for rheumatology consultations and accounted for 15.6% of rheumatological disorders in Abidjan. **Objective:** The aim of this work was to study the epidemiological and diagnostic features of non-traumatic gonalgia (NTG) in a black adult population from sub-Saharan Africa. **Patients and Methods:** This was a five-year retrospective descriptive study (January 2014 to December 2018) of black sub-Saharan African adult patients with non traumatic gonalgia seen in the rheumatology department of the Bouake University Hospital in Côte d'Ivoire. **Results:** Of 2198 patients seen for rheumatological conditions, 140 had non traumatic gonalgia (6.4%). The mean age of patients was 56.13 ± 13.3 years (extremes 20 and 87 years), and the sex ratio was 0.43 (42 men and 98 women). Gonalgia without swelling was observed in 33.6% of cases. Symptoms were predominantly progressive (97.1%), chronic (82.1%) and bilateral (50%). The causes of TNM were gonarthrosis (85%), septic arthritis (7.1%), reactive arthritis (2.9%), gout (2.9%), rheumatoid arthritis (1.4%) and chondrocalcinosis (0.7%). Gonarthrosis (119/140) was bilateral in 65 patients, bi- or tri-compartmental in 83, radiographic stage (Kellgren and Lawrence) III in 80 and IV in 15. A germ was isolated in two cases of septic arthritis (methicillin-sensitive *Staphylococcus aureus* and *Streptococcus pneumoniae*). **Conclusion:** GNT is common in rheumatology practice in Bouake, and mainly affects women in their fifties. It is most often a chronic bilateral gonalgia, with gonarthrosis as the main etiology.

Keywords

Non-Traumatic Gonalgia, Gonarthrosis, Bouake

1. Introduction

Gonalgia is a frequent reason for rheumatology consultations [1] [2] [3]. Non-traumatic gonalgia is a real public health problem, as gonarthrosis is the main etiology affecting over 250 million people worldwide [2] [3]. Indeed, the knee is the main site of osteoarthritis in the limbs, accounting for 85% of the burden of osteoarthritis in general [2]. In sub-Saharan Africa, several studies have focused on non-traumatic gonalgia in adults [4]-[10]. Most of these studies concluded that it is the second most common reason for rheumatology consultations, and that its main etiology is gonarthrosis (8% - 16% of consultations) [4]-[10].

In Abidjan, Côte d'Ivoire, a study corroborated these data, showing that non-traumatic knee pathology accounted for 15.6% of rheumatological disorders [11]. At the University hospital of Bouake, Ivory Coast's second largest city, no such study has been carried out. The aim of this study was therefore to investigate the epidemiological and diagnostic characteristics of non-traumatic knee pain in adults in Bouake.

2. Patients and Methods

This was a retrospective descriptive study over a five-year period from January 2014 to December 2018 of adult patients with non-traumatic gonalgia. These were black sub-Saharan African patients seen in the rheumatology departments of the Bouake University Hospital in Ivory Coast including any patient aged 18 years or older, suffering from non-traumatic gonalgia who had at least performed a comparative standard radiograph of both knees in front and in profile under load. Non-traumatic gonalgia was defined as any uni or bilateral pain located in the knee, occurring outside a traumatic context. Data were collected from patients' clinical records using a survey form (Appendix 1). Patients with a history of trauma and/or knee surgery, and patients whose clinical records were unusable due to a lack of information deemed crucial (epidemiological and diagnostic characteristics studied) were not included in the study. The epidemiological characteristics studied were age, sex and profession. The clinical aspects studied were reason for consultation, mode of onset and duration of symptomatology, knee involved, potential favoring factors, antecedents, diagnostic aspects (joint puncture, radiographic lesions, retained diagnosis). We obtained authorization N°068 dated March 27, 2019, from the medical and scientific management of the Bouake University Hospital to carry out this study (Appendix 2). Ethically, the confidentiality and anonymity of respondents were respected. Data entry was carried out using Microsoft Word 2013 software. Data processing and analysis were carried out using EPI Info software (version 7). Tables and graphs

were created on Excel 2013.

3. Results

Of 2198 patients seen for rheumatological conditions during the study period, 140 had non-traumatic gonalgia (6.4%). The mean age of the study population was 56.13 ± 13.3 years, with extremes of 20 and 87 years. The 50 - 59 age group was the most represented (27.9%). The sex ratio was 0.43, *i.e.*, 42 men and 98 women. Regarding patients' occupations, 45% of patients were housewives, 27.85% were manual workers (farmers, breeders, fishermen, hunters, shopkeepers, manual laborers, and laborers) (27.85%) and 27.1% were office workers (teachers, medical staff, secretaries and administrative staff). 92 patients lived in Bouake (66%) (**Table 1**). Metabolically, 70% of our patients were obese, 37.1% had hypertension and 5.7% were diabetic (**Table 2** shows the interview characteristics of the study population). At the first consultation, while 33.8% of patients had isolated gonalgia, 64.1% also had painful knee swelling. Joint puncture was performed in 31 patients (22.1%). Fluid was macroscopically citrine yellow in 15 patients, dodgy in seven, clear "egg-white" in six, and purulent in three. Puncture fluid analysis was obtained in 16 patients (16/31 punctures). The fluid was sterile in 14 cases, and a germ was identified in two: methicillin-sensitive *Staphylococcus aureus* and *Streptococcus pneumoniae*. Gonarthrosis was diagnosed in 85% of patients, with a mean age of 56.59 ± 13.37 years. Gout was found in 3.6% of patients, with an average age of 67.8 ± 16.57 years. **Table 3** shows the positive diagnosis of patients, and **Table 4** shows the characteristics of gonarthrosis.

4. Discussion

The hospital incidence rate for gonalgia is 6.4% in Bouake, and its main etiology is gonarthrosis (85% of cases). This high prevalence reflects the high prevalence of degenerative pathology in African rheumatology. In 1998, Eti *et al.* found a prevalence of 72.5% of rheumatological diseases [12]. This corroborates data from sub-Saharan Africa and Europe [4]-[10]. In fact, gonalgia is the second most common reason for rheumatology consultations [1]-[11]. It is a genuine public health problem, as gonarthrosis, the main etiology, affects more than 250 million people worldwide [2] [3]. The knee is the main site of limb osteoarthritis, accounting for 85% of the burden of osteoarthritis in general [2].

The epidemiological and diagnostic characteristics of the population studied are superimposable on data from Sub-Saharan Africa [1]-[11]. Patients suffering from gonalgia are most often women in their fifties, with favorable factors, a chronic course of symptoms and an advanced stage of radiographic lesions.

The high prevalence in women may be explained by the anatomical profile of African women, who tend to have gynoid obesity, sometimes associated with impaired knee statics, thus favoring the onset of gonarthrosis [4] [7]. The average age at diagnosis of gonalgia is around 56. These are women in the menopause, with reduced hormonal protection of the musculoskeletal system [8] [10].

Table 1. Socio-demographic characteristics of the population.

Variables		
Average age in years	56.13 years \pm 13.28 (20 and 87)	
Sex		
<i>Sex ratio M/F 0.43</i>		
	Number (n)	Percentage (%)
Female	98	70
Male	42	30
Occupation	Number (n)	Percentage (%)
Housewife	63	45.00
Liberal	29	20.71
Teacher	12	8.57
Retirement	9	6.43
Administrator	8	5.71
Paramedics	5	3.57
Farmer	3	2.14
Pupil/Student	3	2.14
Industrial and technical	3	2.14
Unemployed	3	2.14
Armed forces	2	1.43
Total	140	100

Table 2. Interview characteristics of the study population.

		Number (N = 140)	Frequency (%)
Reason for consultation	Isolated gonalgia	47	33.6
	Painful swelling	87	64.1
	Oligoarthritis	4	2.9
	Polyarthritis	2	1.4
Start mode	Brutal	4	2.9
	Progressive	136	97.1
Evolution	Aquamarine	2	1.4
	Subacute	23	16.4
	Chronicle	115	82.1
Knee involved	Law	39	27.9
	Left	31	21.1
	Bilateral	70	50
Contributing factors	Overweight/Obesity	98	70
	Static disorders	70	50
Past history	Hypertension	52	37.1
	Type 2 diabetes	8	5.7
	Sickle cell disease SC	2	1.4

Table 3. Positive diagnosis of non-traumatic gonalgia.

	Number (N = 140)	Frequency (%)
Gonarthrosis	119	85
Septic arthritis	10	7.1
Reactive arthritis	4	2.9
Drop	4	2.9
Rheumatoid arthritis	2	1.4
Chondrocalcinosis	1	0.7

Table 4. Radiographic characteristics of 119 cases of gonarthrosis.

		Number (N = 119)	Frequency (%)
Global headquarters	Isolated left	26	21.85
	Isolated line	28	23.5
	Bilateral	65	54.5
Radiographic localization	Isolated femorotibial	26	21.85
	Isolated femoropatellar	10	8.4
	Bi-compartmental or tri-compartmental	83	69.75
Radiographic classification according to Kellgren and Lawrence	Stage 2	24	21.2
	Stage 3	80	67.2
	Stage 4	15	12.6

Symptomatology was chronic at the time of diagnosis, and advanced structural lesions were already present and frequent. Among our patients, 27% had static disorders, with the following proportions: valgum knee 21% and varum knee 6%. This evolutionary pattern may be linked, on the one hand, to a lack of financial resources, trivialization of symptoms, self-medication and the intervention of several players, notably traditional therapists, before specialist advice, and, on the other hand, to the insufficient number of rheumatologists in Bouake. These reasons could be at the root of the delay in consultation. A shorter diagnostic delay could have enabled more appropriate management and slowed the clinical and paraclinical evolution of gonalgia [4] [8] [11].

Of 31 joint punctures performed, analysis was obtained in only 16 patients. This illustrates the diagnostic difficulties of gonalgia in our context [4]-[11]. The absence of social security means that the entire cost of medical treatment is borne by the patient. The direct consequence is that the practitioner is obliged to carry out treatment based on a presumptive diagnosis, as evidenced by the 10 probable cases of septic arthritis (7 suspicious-looking fluids and 3 purulent) for only two identified germs.

Speaking of chronic inflammatory rheumatism, the hospital prevalence of rheumatoid arthritis involving arthritis of the knees is 1.43% of rheumatological

conditions. Our results concur with those of Alloh *et al.* in 2012 in Abidjan, whose prevalence is estimated at 3.7% [13]. The average age of our patients was 45 years. This average age is in line with that observed by Kakpovi and al in 2017 in Burkina [14]. In our study, we noted one man and one woman. Classically, this is a female predominance. This may be explained by the small size of our sample.

5. Conclusion

Non-traumatic gonalgia is common in adult rheumatology practices in Bouake. It mainly affects patients in their fifties, and women are more often affected. Patients consult us mainly because of painful knee swelling, with progressive onset and chronic evolution. The main etiology is gonarthrosis, which is most often bilateral, bi- or tri-compartmental, with an advanced radiological stage. It is important to carry out a community health campaign on gonalgia and gonarthrosis. This could involve raising public awareness, combined with ongoing training for health workers. The aim would be to reduce the delay in diagnosis to prevent the onset of disabling symptoms and the progression of structural lesions, thereby improving patients' quality of life.

Limits of the Study

The difficulties and limitations encountered were generally linked to the retrospective nature of the study. These problems are of two types: firstly the difficult exploitation of the files, then the insufficient exploration of the patients.

Conflicts of Interest

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

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Annex 1. Data Collection Sheet

NON-TRAUMATIC PATHOLOGIES OF THE KNEE

REF N°: DEPARTMENT: RHEUMATOLOGY

I. SOCIO-DEMOGRAPHIC CHARACTERISTICS

1. Order number:
2. Last name and first names:
3. Age: years
4. Gender: MF
5. Occupation:
6. Ethnicity:
7. Residence:
8. Region of origin:
9. Religion:

II. REASON FOR CONSULTATION AND HISTORY OF THE DISEASE

10. Reason for consultation:
11. Start date: acute subacute chronic
12. Start mode: abrupt gradual
13. Pain: yes no
- 12.1- Seat: right knee left knee bilateral involvement
- 12.3- Schedule: mixed inflammatory mechanics
- 12.5- Triggering factor: yes no
14. Other functional signs: swelling cracking stiffness blockage deformation yielding
15. Visceral sign: diarrhea constipation burning urination
16. General signs: fever asthenia anorexia weight loss weight gain
17. Treatment undertaken:

III. BACKGROUND

18. Staff:
 - 17.1- medical:
 - 17.1.1- Similar episode of knee pain: yes no
 - 17.1.2- Port of entry: cough ENT infection conjunctivitis others:
 - 17.1.3- Defects: hypertension diabetes UGD gout heart disease HIV tuberculosis hemoglobinopathy
 - 17.1.4- stigmata of immunosuppression: long-term fever chronic diarrhea shingles
 - 17.2- Gyneco-obstetrics:
 - 17.2.2- Taking estrogen and progestin: yes no
- 18- surgical: Knee trauma yes no
- 19- Alcohol and tobacco poisoning: yes no

IV. PHYSICAL EXAMINATION

19. Weight: Size: BMI:
20. Inspection: scarification swelling Redness static disorder:
21. Palpation: patellar shock pain, planer sign, drawer movement, ligamentous

instability Heat meniscal cry Grinding test of Appley patellar touch

22. Locoregional examination: quadriceps amyotrophy sural amyotrophy

23. Was the joint puncture carried out: yes no

If yes, the macroscopic appearance of the liquid:

24. Syndromic diagnosis: patellofemoral syndrome femorotibial syndrome

PARACLINICAL EXAMINATIONS

25. Biology report:

NFS: PNN

Lymphocytes

Anemia: Yes No

Sedimentation speed: VS-H1

VS-H2

CRP:

IDR: Non-significant Positive Anergy Significant Positive Phlyctenular

Metabolic assessment: Normal total cholesterol

Normal HDL cholesterol

Normal blood sugar

Normal uric acid

Triglyceride

ECB of joint fluid: yes no

If yes, results

Others:

26. Radiological assessment:

Standard Rx: incidence face profile axial 60° axial 30°

Result:

Scanner: yes no

Result:

MRI: yes no

Result:

27. Synovial biopsy: yes no result:

V. DIAGNOSTIC

VI. TREATMENT AND PROGRESS

28. Hospitalization: yes no

29. Non-drug treatment: rest MHA use of cane hypocaloric diet immobilization

30. Medical treatment:

31.1- analgesic: level 1 level 2 level 3

31.2- NSAIDs: yes no

31.3- Antibiotic: yes no

31.4- Infiltration: yes no

31.5- Viscosupplementation: yes no

31.6- basic treatment:


31. Surgical treatment: yes no

32. Physiotherapy: yes no


- 33. Evolution under treatment: favorable unfavorable
- 34. Aftermath:
- 35. Complication:

Annex 2. Authorization for the Medical and Scientific Management of the University Hospital of Bouake

MINISTÈRE DE LA SANTÉ ET
DE L'HYGIÈNE PUBLIQUE




CENTRE HOSPITALIER ET
UNIVERSITAIRE DE BOUAKÉ



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DIRECTION MÉDICALE ET SCIENTIFIQUE

Réf. N° 068 - MS/HU/CHU-B/DG/DMS/SM/19

REPUBLIQUE DE CÔTE D'IVOIRE
Union - Discipline - Travail



Bouaké, le 27/03/2019

Au
Directeur de thèse
(Pr. DABOIKO Jean Claude)

Objet : réponse à votre demande d'autorisation de recherche scientifique


Monsieur le Directeur de thèse,

Nous accusons réception de votre courrier en date du 27/03/2019 demandant notre accord pour une autorisation de recherche dans le service de Rhumatologie dont le thème est : « pathologies non traumatique du genou », pour Monsieur GOUA Jean Jacques, étudiant régulièrement inscrit en année de thèse à l'UFR Sciences Médicales de l'Université Alassane Ouattara de Bouaké.

Nous venons par la présente vous donner notre accord pour cette étude.

Nous vous prions de recevoir, Monsieur le Directeur de thèse, nos salutations distinguées.

Le Directeur Médical et Scientifique



Pr KACOUCHIA NIAMKE B

Ampliations :
DG.....I
DAF.....I
CHRONO.....I