

The Impact of Physiotherapy in the Management of Non-Operated Gonarthrosis in Mali

Coulibaly, B^{1*}, Diakit , M², Keita, A², Ciss  L², Coulibaly, M², Savan , M³, Simpara, B², Kanout , A², Sissoko, M², Fofana, R², Bamba, I², Thiam, H^{2,4}

¹National Institute for Training in Health Sciences (INFSS), Mali

²Bamako Dermatology Hospital (HDB), Mali

³Donka National Hospital, Mali

⁴Faculty of Medicine and Odontology (FMOS), Mali

DOI: [10.36347/sasjm.2023.v09i06.001](https://doi.org/10.36347/sasjm.2023.v09i06.001)

| Received: 25.04.2023 | Accepted: 29.05.2023 | Published: 02.06.2023

*Corresponding author: Coulibaly, B

National Institute for Training in Health Sciences (INFSS), Mali

Abstract

Original Research Article

Introduction: According to the WHO, osteoarthritis is the result of mechanical and biological phenomena that destabilise the balance between the synthesis and degradation of cartilage and subchondral bone. Gonarthrosis is a genuine public health problem in developed countries due to its high frequency, the functional impotence it causes and its socio-economic impact [2, 3]. Its prevalence is estimated at between 7% and 17% in people aged over 45 [4]. This incidence has continued to increase over the last few decades due to the industrialisation of the world and the sedentary lifestyle of human beings. In the absence of any study on the role of physiotherapy in the management of gonarthrosis in Mali. We deemed it necessary to undertake a study whose aim was to evaluate the impact of physiotherapy in the management of non-operated gonarthrosis in the physiotherapy department of the Centre National d'Appareillage Orthop dique du Mali (C.N.A.O.M). **Methods and Patients:** This was a descriptive cross-sectional study over a period of one month. All patients seen in consultation with gonarthrosis and consenting were included. **Results:** In total, out of 561 patients seen in consultation at the C.N.A.O.M, we included 10 patients, i.e. 1.78%. Females accounted for 86%, with an average age of 55 years. Gonarthrosis was unilateral in 28.6% and bilateral in 71.4%. With the exception of one patient, all the other patients were overweight or obese. Apart from one patient, physiotherapy improved the symptoms in all our patients. **Conclusion:** Gonarthrosis is a very disabling condition. Our results are similar to those in the literature, i.e. it mainly affects obese adult women. Management is multidisciplinary. Physiotherapy plays a key role in the management of gonarthrosis. It significantly improves the clinical signs and quality of life of patients. A multicentre case-control study would be useful to assess the efficacy of physiotherapy alone in the management of gonarthrosis.

Keywords: Impact of physiotherapy, management, non-operated gonarthrosis, Mali.

Copyright   2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Osteoarthritis is the result of mechanical and biological phenomena that destabilise the balance between the synthesis and degradation of cartilage and subchondral bone, according to the WHO [1]. The term gonarthrosis refers to osteoarthritis affecting the knee joint. Gonarthrosis is a genuine public health problem in developed countries due to its high frequency, the functional impotence it causes and its socio-economic impact [2, 3]. Its prevalence is estimated at between 7% and 17% in people aged over 45 [4]. This incidence has continued to rise in recent decades due to the

industrialisation of the world and the sedentary lifestyle of human beings [4, 5].

In Africa, over the last decade, African authors have taken an interest in this condition [6-9]. In Togo, gonarthrosis is the second most common site of osteoarthritis after the spine in rheumatology consultations [7, 8] and accounts for 8% of rheumatology consultations [6]. In Mali, in 2006, a study reported that gonarthrosis accounted for 13.29% of consultations in the orthopaedic surgery and traumatology department [9]. The main risk factors were female gender and obesity [9]. The overall and prolonged ageing of the world's population, particularly

Citation: Coulibaly, B, Diakit , M, Keita, A, Ciss  L, Coulibaly, M, Savan , M, Simpara, B, Kanout , A, Sissoko, M, Fofana, R, Bamba, I, Thiam, H. The Impact of Physiotherapy in the Management of Non-Operated Gonarthrosis in Mali. SAS J Med, 2023 Jun 9(6): 579-582.

in developing countries, is set to increase. This is partly explained by the recent rise in the prevalence of gonarthrosis, and the growing interest in this condition [10]. The management of gonarthrosis is multidisciplinary; in Mali, it is essentially rheumatological and surgical.

In the absence of any study on the role of physiotherapy in the management of gonarthrosis in Mali. We deemed it necessary to undertake a study to evaluate the impact of physiotherapy in the management of non-operated gonarthrosis in the physiotherapy department of the Centre National d'Appareillage Orthopédique du Mali (C.N.A.O.M).

METHODS AND PATIENTS

Study Setting:

Our study took place at the Centre National d'Appareillage Orthopédique du Mali (C.N.A.O.M), which is the largest physiotherapy centre in the district of Bamako.

Type of study:

This was a descriptive cross-sectional study over a period of one month from 01 to 31 March 2018.

Study population:

The study concerned; all patients seen in consultation for non-operated gonarthrosis managed at the C.N.A.O.M.

Inclusion criteria:

These were all patients with non-operated gonarthrosis confirmed by standard radiography and agreeing to participate in the study.

Conduct of the study:

We interviewed each patient (on the basis of a questionnaire reviewing the various non-

pharmacological means recommended by EULAR for treating gonarthrosis), for an average of 20 minutes, with the aim of reviewing the clinical history of their osteoarthritis and all non-drug treatments. Patients received physiotherapy twice a week for at least 40 minutes per session. After ten sessions, the patients' condition was assessed using the Linquesne index.

Ethical considerations and professional conduct:

Anonymity was guaranteed and non-participation in the study did not affect patient care. No blood samples were taken.

RESULTS

Out of a total of 561 patients seen in consultation at the C.N.A.O.M, we included 10 patients (1.78%). Of these ten patients, only 7 (70%) received physiotherapy. There were 6 female patients (86%) and 1 male patient (14%). The sex ratio was 0.16. The mean age was 55 years and the standard deviation was 13 years, with extremes of 31 and 68 years. The 31 to 60 age group accounted for 4 cases (57.1%) and the over 60 age group accounted for 3 cases (42.9%). The occupations were: a cook (14.3%), a farmer (14.3%), a matron (14.3%), two housewives (28.6%), an instructor (14.3%) and a pensioner (14.3%). According to the type of gonarthrosis: unilateral gonarthrosis represented 2 cases (28.6%) and bilateral gonarthrosis represented 5 cases (71.4%). According to the BMI of our patients: one case had a normal BMI (BMI<25), i.e. 14.3%, one case was overweight (25-30), i.e. 14.3%, and finally 5 cases were obese (BMI >30), i.e. 71.4%. The overweight and obese patients were female, whereas the only normal-weight patient was male. According to the impairment: pain was present in all patients and was of the mechanical type, amyotrophy in 80% of patients, swelling in 28.6% of patients and finally the absence of stiffness in all patients.

Table I: Distribution of patients according to degree of active amplitude

| Type of action | Member involved | Degree of action | number (n=7) | Percentage |
|----------------|-----------------|------------------|--------------|------------|
| Extension | Right | Complete | 5 | 71,4 |
| | | incomplete | 2 | 28,6 |
| | Left | Complete | 4 | 57,1 |
| | | incomplete | 3 | 42,9 |
| Flexion | Right | Complete | 0 | 0,0 |
| | | incomplete | 7 | 100,0 |
| | Left | Complete | 2 | 28,6 |
| | | incomplete | 5 | 71,4 |

Table II: Distribution of patients according to degree of passive amplitude

| Type of action | Member involved | Degree of action | number (n=7) | Percentage |
|----------------|-----------------|------------------|--------------|------------|
| Extension | Right | Complete | 1 | 14,3 |
| | | incomplete | 6 | 85,7 |
| | Left | Complete | 1 | 14,3 |
| | | incomplete | 6 | 85,7 |
| Flexion | Right | Complete | 1 | 14,3 |
| | | incomplete | 6 | 85,7 |
| | Left | Complete | 1 | 14,3 |
| | | incomplete | 6 | 85,7 |

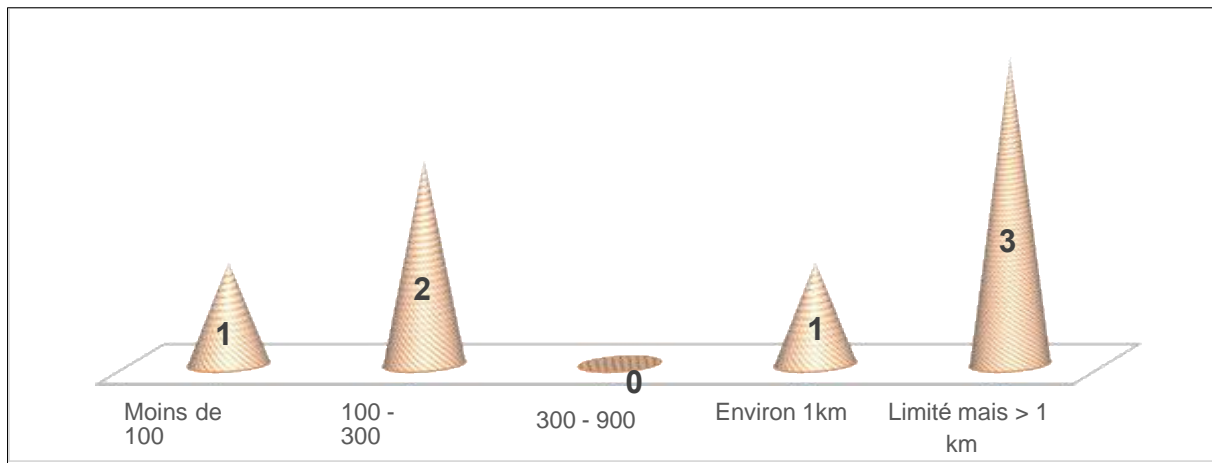


Figure 1: Breakdown of patient performance by distance travelled

Difficulty of daily living: complete squatting and walking on uneven ground impossible in 42.8% and 14.3% of cases respectively. Disability according to the Lequesne functional index: disability was extremely severe in 2 patients (28.6%), very severe in 2 patients (28.6%) and severe in 3 patients (42.8%). Progression of patients undergoing physiotherapy: 2 patients (28.6%) noted a clear improvement after the 10 physiotherapy sessions, 4 patients (57.1%) noted a slight improvement and 1 patient (14.3%) noted no improvement.

DISCUSSION

We conducted a descriptive cross-sectional study on the management of non-operated gonarthrosis at the CNAOM in Mali. To our knowledge, this study is the first of its kind in Mali.

The main limitations of this study were the mono-centric recruitment site, the small sample size, and the short duration of the study due to lack of financial resources.

Nevertheless this study allowed us to know the place of physiotherapy in the management of gonarthrosis in Mali.

Frequency:

In our series the hospital frequency was 1.78%. This frequency was lower than that of another previous study in Mali, which reported a frequency of 13.3% [9]. It is also lower than in the sub-region [7, 8]. This difference could be explained by the methodological approach of recruiting only patients with non-operated gonarthrosis.

Socio-demographic data:

Several authors have reported that gonarthrosis occurs predominantly in adult women [11-13]. This trend was confirmed in our cohort. This could be explained by the fact that women are very sedentary and most of them are also obese. Housewives accounted for the majority of our sample. This could be explained

by the moderate and repeated microtraumas during housework [11]. On the other hand, Duthie [13] reported a higher frequency of osteoarthritis in miners and dockers than in office workers. Occupations involving the carrying of heavy loads could be a risk factor in gonarthrosis.

Clinical Data

Impairment: Pain-related functional impotence was present in all patients, and this pain was essentially mechanical in nature. This confirms that pain is the main symptom in gonarthrosis. Amyotrophy and oedema were present in 80% and 28.6% of patients respectively. None of the patients had stiffness. Pain was the main reason for consultation. This finding was similar to that of Koné and Dieppe [14, 15]. Body mass index: obesity was present in 71.4% of cases (BMI>30) and female gender was a risk factor for obesity with a $p=0.0302$. In the TRAORE.A study, obese patients accounted for almost half the cases [11]. Numerous studies confirm that the onset of medial femorotibial gonarthrosis is linked to obesity [16]. Affected limb: bilateral gonarthrosis is the most common, affecting 71.4% of patients, compared with 28.6% of unilateral gonarthroses, which in our case were all straight. This finding was revealed by E. Noël *et al.*, [17] who found 61% bilateral gonarthrosis.

Lequesne's algo functional index: all patients had a disability according to Lequesne's algo functional index, and this disability was extremely severe in 28.6% of patients. In Adiaratou Traoré's study, 17.5% of patients had an extremely severe disability.

Difficulty in daily life: in our study, 100% of patients had slight difficulty going up and down stairs. Complete squatting was impossible for 42.86% of our patients, while 14.3% of patients could not walk on uneven ground.

According to the evolution of the patients after physiotherapy combined with drug treatment: at the end of the physiotherapy sessions, 28.6% of the patients

noted a clear improvement and 57.1% noted a slight improvement while 14.3% of the patients declared that there was no improvement after the physiotherapy treatment. In contrast, the results of TRAORE.M show that almost half, i.e. 48.38% of patients, reported an improvement after treatment [11]. This difference could be explained by the fact that our patients were assessed using the visual analogue scale (VAS) and Lequesne's algo-functional index, whereas in TRAORE.M patients were assessed using the VAS alone.

CONCLUSION

Gonarthrosis is a very disabling condition. Our results are similar to those in the literature, i.e. it mainly affects obese adult women. Management is multidisciplinary. Physiotherapy plays a key role in the management of gonarthrosis. It significantly improves the clinical signs and quality of life of patients.

A multicentre case-control study would be useful to assess the efficacy of physiotherapy alone in the management of gonarthrosis.

REFERENCES

- Cooper, C., McAlindon, T., Snow, S., Vines, K., Young, P., Kirwan, J., & Dieppe, P. (1994). Mechanical and constitutional risk factors for symptomatic knee osteoarthritis: differences between medial tibiofemoral and patellofemoral disease. *The Journal of rheumatology*, 21(2), 307-313.
- Carnet, J. (1996). Epidemiology of osteoarthritis of the knee: results of the Baltimore Longitudinal Study on Aging. *Revpratt*, 46, 5-7.
- Andrianakos, A. A., Kontelis, L. K., Karamitsos, D. G., Aslanidis, S. I., Georgountzos, A. I., Kaziolas, G. O., ... & ESORDIG Study Group. (2006). Prevalence of symptomatic knee, hand, and hip osteoarthritis in Greece. The ESORDIG study. *The Journal of rheumatology*, 33(12), 2507-2513.
- Neogi, T., & Zhang, Y. (2013). Epidemiology of osteoarthritis. *Rheumatic Disease Clinics*, 39(1), 1-19.
- Jason, T. (1998). *L'arthrose* Edition Fallois, Paris, P 202.
- Oniankitan, O., Fianyo, E., & Mijiyawa, M. (2014). Risk factors for gonarthrosis in rheumatology consultation in Lomé (Togo). *Rev Mar Rhum*, 29, 28-31.
- Bileckot, R., Ntsiba, H., Mbongo, J. A., Masson, C., & Brégeon, C. (1992). Les affections rhumatismales observées en milieu hospitalier au Congo. *La Semaine des hôpitaux de Paris*, 68(10), 282-285.
- Altman, R., Asch, E., Bloch, D., Bole, G., Borenstein, D., Brandt, K., ... & Wolfe, F. (1986). Development of criteria for the classification and reporting of osteoarthritis: classification of osteoarthritis of the knee. *Arthritis & Rheumatism: Official Journal of the American College of Rheumatology*, 29(8), 1039-1049.
- N'diaye, A. S. (2008). Etude épidémiologique, radiologique et Clinique de la gonarthrose dans le service de chirurgie orthopédique et traumatologique de l'hôpital de Gabriel Touré. [Thèse Med].
- Ethgen, O., & Reginster, J. Y. (2004). Degenerative musculoskeletal disease. *Annals of the rheumatic diseases*, 63(1), 1-3.
- Traore, A. (2008). Etude clinique et radiologique de la gonarthrose dans le service de rhumatologie au CHU du Point G [Thesis in Medicine].
- Human Development Report UNDP (United Nations Development Programme) Edition Economica, Paris, 1997.
- Bauwens, K., Matthes, G., Wich, M., Gebhard, F., Hanson, B., Ekkernkamp, A., & Stengel, D. (2007). Navigated total knee replacement: a meta-analysis. *JBJS*, 89(2), 261-269. <http://www.ejbs.org/cgi/content/full/89/8/1867-a> Site consulté le 30-04-07
- One, D. (2001). Medical treatment of osteoarthritis. [Thèse de pharmacie]. Bamako, N15.
- Dieppe, P. (1993). Drug treatment of osteoarthritis. *The Journal of Bone and Joint Surgery. British volume*, 75(5), 673-674. <http://www.jbjs.org.uk/cgi/reprint/75-B/5/673/?ck=nck>. Site consulté le 20-04-2023.
- Michel, L., & Charles, J. M. (1990). Atlas de l'arthrose Edition Masson, Paris, p1-143.
- Noël, E., Neyret, P., Tebibj, E., & Bouvierm, D. (1990). Caractéristique des 228 gonarthrosiques opérées en 1986. *Revu Rhum*, N°10, 04A.678