

Non-Traumatic Shoulder Pain in Rheumatology Outpatients at Lomé (Togo): Epidemiological, Clinical, Aetiological and Therapeutic Aspects

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Abstract

Objective: to determine the epidemiological, clinical, aetiological and therapeutic characteristics of non-traumatic shoulder at Lomé, the capital of Togo. **Patients and Method:** This was a descriptive and cross-sectional study from 1st January 2018 to 31st December 2022, on the records of patients suffering from non-traumatic shoulder pain at the rheumatology department of Bè Hospital (Lomé). Data were collected and analyzed by Microsoft Excel 2019 and R 4.0.4 software in the RStudio 1.4 environment. **Results:** Of the 3695 outpatients seen during the period, 188 (5%) presented with shoulder pain with no trauma. The 188 patients were represented by 77.1% females (sex ratio 0.3). The average age was 56.3 ± 14.9 years. The pain had a progressive onset in 83.5% of cases, and was mechanical in nature in 80.3%. The average duration was 13.5 ± 24.5 months. The pain was located at only one site in 77.1% of cases. Simple painful shoulder was diagnosed in 80.9%, followed by pseudo-paralytic shoulder (7.4%), frozen shoulder (6.4%), and hyperalgesic shoulder (5.3%). Periarticular pathology was predominant, accounting for 86.2% of cases, followed by chronic inflammatory arthropathies (6.4%), and osteoarthritis (3.2%). Treatment was based on analgesics (60.6%), musculoskeletal local steroid injection (53.7%) and NSAIDs (43.6%). **Conclusion:** Non-traumatic shoulder pain is common in rheumatology practices at Lomé. It is dominated by periarticular pathology. Treatment is mainly based on pharmacotherapy. Further studies need to be carried out to confirm these results and to assess the impact of the pain on patients' quality of life.

Keywords

Shoulder Pain, Tendinopathy, Periarticular Pathology, Black Africa (Togo)

1. Introduction

Musculoskeletal disorders are defined by the World Health Organisation (WHO) as all pathologies affecting joints, bones and muscles. In 2019, these disorders affected 1.71 billion people, representing the main cause of disability in the world and the main reason for seeking rehabilitation care [1]. Among these musculoskeletal disorders painful shoulder, or scapulargia, plays a major role. In the United Kingdom, painful shoulder is the third most common musculoskeletal disorder, after low back pain in general medical practice [2]. In sub-Saharan Africa, two studies carried out on hospital cases of painful shoulder reported 14.3% in Nigeria [3] and 14.8% in Benin [4].

The management of painful shoulder is a challenge for general practitioners [2]. In fact, pain persists in half of patients six months after their first consultation [5], and 40% of them continue to present symptoms one year after this initial treatment [6] [7]. This persistence of symptoms has a significant impact on patients' quality of life and professional productivity. In Quebec, for instance, painful shoulder represented 16% of musculoskeletal disorders among workers in 2021, according to the Committee on Standards, Fairness, Health and Safety at Work [8].

To our knowledge, no study has been published on this subject in Togo. The aim of our study was to describe the epidemiological, clinical, aetiological and therapeutic aspects of non-traumatic scapulargia in Lomé, the capital of Togo.

2. Patients and Method

1) *Type and setting of the study*

This was a descriptive cross-sectional study based on patients' hospital records. The setting for the study was Bè Hospital, a district hospital in Lomé.

2) *Study period*

Patients' hospital records covering a 5-year period, from 1st January 2018 to 31st December 2022, were collected.

3) *Inclusion and exclusion criteria*

Patients over 15 years of age with painful shoulder alone or associated with other joint disorders were included. Patients with post-traumatic painful shoulder, cervical spondylosis associated with painful shoulder, and patient's incomplete records were excluded.

4) *Data collection*

Data for the study were collected using a questionnaire which included: socio-demographic data, clinical data, additional examinations carried out, diagnoses made and treatment received.

5) *Rotator cuff muscle diagnostic tests*

Tendon damage is suspected when the shoulder joint appears normal on examination, but there is pain on palpation of the tendon and on forced movement. Testing the cuff allows for precise analysis of each tendon separately. Weakness when contracting against resistance indicates a tendon rupture, while pain indicates tendon damage.

- Examination of the subscapularis

The Gerber test or lift-off test is used to examine the subscapularis. With the arm in internal rotation, the patient places the back of his hand on his back and tries to lift it away from his back, resisting the examiner. This manoeuvre is impossible in the event of a rupture [9].

- Examination of the infraspinatus

The infraspinatus tendon is examined using the Patte manoeuvre: arm raised laterally to 90°, in the plane of the scapula, elbow flexed to 90° and supported by the examiner, external rotation against resistance. The test is positive if there is pain or loss of strength [9].

- Examination of the supraspinatus

The supraspinatus tendon is examined using the Jobe manoeuvre. With the arm extended, abducted at 90°, flexed horizontally at 30° and internally rotated, the examiner applies downward pressure on the forearm. A positive Jobe test (inability to hold the arm against gravity) indicates a supraspinatus lesion [9].

- Examination of the long head of the biceps

This analysis is performed using the palm-up test: the patient must maintain or continue the extension movement. With the upper limb abducted at 90° and flexed horizontally at 30°, with the palm of the hand facing upwards, against the resistance of the examiner's hand applying downward pressure on the supinated forearm, the test is positive if pain occurs in the long head of the biceps [9].

The search for subacromial impingement is based on the Neer, Yocum, and Hawkins tests.

6) *Operational definitions*

- Simple painful shoulder: shoulder pain that is not accompanied by, or is accompanied by only slight, joint limitation.
- Pseudoparalytic shoulder: clinical picture observed during a massive rupture of the rotator cuff tendons.
- Frozen shoulder: a condition affecting the shoulder, involving retraction and thickening of the lower and anterior part of the joint capsule, resulting in painful stiffness leading to complete loss of mobility.
- Hyperalgesic shoulder: sudden and intense shoulder pain most often associated with the breakdown of hydroxyapatite calcification in the subacromial-deltoid bursa, the glenohumeral joint, or even the cranial end of the humerus.
- Craftsmen: self-employed person engaged in manual labour for which he has professional qualifications. This category includes carpenters, plumbers, bakers, hairdressers, etc., who run their own businesses.

- Manual workers: salaried manual workers, generally employed in industry, construction or agriculture.
- Farmers: people engaged in agriculture, raising living organisms for food or raw materials.
- Office worker: workers performing administrative tasks in an office environment. This category includes secretaries, administrative assistants, accountants and receptionists.
- Liberal professions: self-employed workers carrying out an intellectual, technical or service activity, generally requiring a higher level of qualification. This category includes lawyers, doctors in private sector, architects and independent consultants.

7) *Data processing and analysis*

The data were entered using Epidata 3.1 software. The database was analysed using Microsoft Excel 2019 and R 4.0.4 in the RStudio 1.4 environment. Quantitative variables were described as means \pm standard deviation. Qualitative variables were described in terms of numbers and percentages, and were compared using Chi2 or Fisher tests. Binary logistic regression was used to identify factors independently associated with the diagnosis of rotator cuff tendinopathy. Variables with a p-value < 0.20 in univariate analysis or considered clinically relevant were included in the multivariate model. The results were expressed as odds ratios with their 95% confidence intervals. The significance level was set at $p < 0.05$. In our multivariate logistic regression model, we included the following variables: the type of diagnoses retained, the anatomical site of pain, whether the pathology was peri-articular or not, and the presence or absence of rotator cuff tendinopathy. Regarding missing data, no variable exceeded the commonly accepted threshold of 5%. Cases with incomplete information were excluded from the final multivariate analysis (complete-case analysis). Sensitivity analyses yielded similar results, suggesting that the management of missing data did not materially affect our findings.

8) *Ethical and administrative considerations*

Official permits were obtained from the Bè Hospital's administrator. Patient anonymity was strictly respected.

3. Results

Out of 3695 outpatients seen during the study period, 188 (5%) presented with non-traumatic painful shoulder.

1) *Socio-demographic data*

Of the 188 patients, 145 (77.1%) were female. The sex ratio was 0.3. The mean age of the patients was 56.3 ± 14.9 years (extremes: 16 and 93 years). Occupations were dominated by shopkeepers (40%), craftsmen (17%) and office workers (11.2%) (**Table 1**). Eighteen patients (9.6%) had no income: 16 housewives (8.5%) and two unemployed (1.1%).

Table 1. Distribution of patients by profession.

	Number	Percentage
Trademan	68	40
Craftsman	29	17
Office worker	19	11.2
Manual worker	12	7.1
Health agent	10	5.9
Retired	10	5.9
Teacher	6	3.5
Student	6	3.5
Farmer	5	2.9
Independent profession	3	1.8
Law enforcement officer	2	1.2
Total	170	100

2) Clinical data

The location of the pain was indicated by 122 patients (64.9%). It was the anterior site of the shoulder in 99 patients (81.1%), the posterior site in 22 patients (18.0%), and the lateral site in three patients (2.5%). Pain onset was progressive in 157 patients (83.5%). The average duration was 13.5 ± 24.5 months. The pain was mechanical in 151 patients (80.3%), inflammatory in 33 patients (17.6%) and mixed in four patients (2.1%).

Thirteen patients (6.9%) presented with an ill general appearance, and 11 patients (5.8%) with fever.

Eighty-one patients had comorbidities. These were hypertension (74%), diabetes (13.6%), asthma (6.2%), sickle cell disease (2.5%), HIV infection (2.5%), and viral hepatitis B (1.2%).

Physical examination revealed pain at one shoulder in 145 patients (77.1%), and three patients (1.6%) had tissue atrophy and joint limitation. Simple shoulder pain was present in 152 patients (80.9%), 14 patients (7.4%) had a pseudoparalytic shoulder, 12 patients (6.4%) had a frozen shoulder, and ten patients (5.3%) had an intensely painful shoulder.

3) Imaging

Shoulder radiograph was normal in 153 patients (81.4%). The most common abnormalities in the remaining 35 patients were osteoarthritis (28.6%) and calcifying tendinopathy (22.9%) (Table 2). None of the patients underwent ultrasonography.

4) Biology

Full blood counts were normal in 179 patients (95.2%), and CRP was normal in 186 patients (98.9%). Of the nine patients with abnormal full blood counts, five had anaemia (55.6%) and four had increased white blood cells (44.4%). Serum protein electrophoresis in one patient revealed a monoclonal gamma globulin peak. The myelogram revealed dysmorphic bone marrow plasmacytosis.

Table 2. Distribution of patients according to radiographic results.

	Number	Percentage
Osteoarthritis	10	28.6
Calcifying Tendinopathy	8	22.9
Demineralisation of the humeral head	7	20
Speckled appearance of the humeral head	5	14.3
Acromion type 3	1	2.9
Arthritis	1	2.9
Ascent of the humeral head	1	2.9
Erosion of the humeral head	1	2.9
Osteonecrosis	1	2.9

5) Diagnosis

Periarticular pathology was predominant, accounting for 86.2% of cases, followed by chronic inflammatory rheumatism (6.4%) and osteoarthritis (3.2%) (**Table 3**). The anterior site of pain was associated with the diagnosis of periarticular pathology ($p = 0.0001$).

Table 3. Distribution of patients by diagnosis.

	Number	Percentage
Periarticular pathology (167)		
Rotator cuff tendinopathy	153	91,6
Calcifying tendinopathy	12	7.8
Subacromial conflict	2	1.3
Adhesive capsulitis	11	6.6
Acromioclavicular arthropathy with adhesive capsulitis	1	0.6
Fibromyalgia	1	0.6
Chronic inflammatory rheumatism (12)		
Rheumatoïd Arthritis	8	66.7
Inflammatory arthritis unclassified	4	33.3
Degenerative pathology (11)		
Omarthrosis	10	90.9
Aseptic osteonecrosis of the humeral head	1	9.1
Pathology tumoral (2)		
Multiple myeloma	1	50.0
Bone tumour	1	50.0
Infectious joint disease (1)		
Infectious arthritis caused by common germs	1	100.0

Logistic regression showed that the probability of periarticular pathology was 8.9 times higher in the presence of a mechanical schedule. Similarly, the probab-

ity of rotator cuff tendinopathy was 6.7 times higher when the pain had a mechanical schedule (Table 4).

Age, gender, occupation, duration of progression, mode of onset and Body Mass Index showed no significant association with the diagnosis of rotator cuff tendinopathy.

Table 4. Comparison of diagnosis according to pain schedule.

	Univariate analysis (Mechanical timetable)				Multivariate analysis			
	n/N	%	OD	CI 95%	p	ODa	CI 95%	p
Diagnosis					0.0004			0.00001
Non-periarticular pathologies	9/21	42.86	1	-		1	-	
Periarticular pathologies	142/167	85.03	7.5	2.6 - 22.4		8.9	1.5 - 12.8	
Rotator cuff tendinopathy					0.00247			0.00036
No	18/35	51.43	1	-		1	-	
Yes	133/153	86.93	6.2	2.5 - 15.2		6.7	3.9 - 9.2	

OD: Odds Ratio; CI: Confidence interval; RCa: adjusted Odds Ratio.

6) Treatment

Analgesics were used in 114 patients (60.6%), followed by local corticosteroid injection (53.7%) and NSAIDs (43.6%). The NSAIDs used included mainly aceclofenac (74.4%) and diclofenac (14.6%). Paracetamol combined with codeine was the most frequently prescribed analgesic (73.7%), followed by tramadol (16.7%). The most commonly used corticosteroid was betamethasone (99%). Five patients (2.7%) benefited from functional rehabilitation. Thirty patients (15.9%) kept their follow-up appointments. All the patients reported an improvement in pain.

4. Discussion

1) Main results

Of the 3695 patients treated during the study period, 188 (5%) presented with non-traumatic shoulder pain. Of these, 77.1% were female (sex ratio 0.3) with an average age of 56.3 ± 14.9 years. Pain was progressive in 83.5% of cases, and mechanical in 80.3%. The average duration was 13.5 ± 24.5 months. Most cases involved one shoulder (77.1%). Simple shoulder pain was the most common clinical presentation (80.9%), followed by pseudoparalytic shoulder (7.4%), frozen shoulder (6.4%), and hyperalgesic shoulder (5.3%). Periarticular pathology predominated, accounting for 86.2% of cases, followed by chronic inflammatory rheumatism (6.4%), and degenerative joint pathology (3.2%). Treatment was based on analgesics (60.6%), periarticular corticosteroid infiltration (53.7%) and NSAIDs (43.6%).

2) Limitations of the study

The small sample size prevents the results from being generalized. The fact that the survey was conducted in a single rheumatology department led to a selection

bias. Togo is a low-income country with limited access to affordable specialist care for the population. The low standard of living of patients has prevented the systematic use of ultrasound. The limited use of ultrasound limits the accuracy of diagnoses. In fact, it is one of the first-line examinations after X-ray in the diagnostic assessment of shoulder pain. It will identify rotator cuff injuries, long head of the biceps tendinopathy, effusion, calcifications, bursitis, or impingement. However, these limitations do not detract from the epidemiological value of this study.

3) *Epidemiological data*

The incidence of non-traumatic shoulder pain in our study was 5%. Hospital studies in Nigeria and Benin reported a frequency of 14.3% [3] and 14.8% [4] respectively. This relatively low frequency in our sample may be influenced by the fact that our study period coincided with the period of the COVID-19 pandemic, potentially affecting patient consultation patterns.

The mean age of the patients included in the present study was 56.3 ± 14.9 years. This was close to that observed by Naredo *et al.* (57.5 years) in Madrid [10] and by Mokulayanga *et al.* (55.7 years) in Congo [11]. Age favors tendon degeneration. Chronic shoulder pain occurs mainly in the second half of life, with a peak in frequency between the ages of 45 and 64. Patients under the age of 40 are more likely to present with shoulder instability, while those over the age of 40 have an increased risk of developing shoulder rotator cuff pathology, capsulitis or glenohumeral osteoarthritis [12].

The predominance of female scapulalgia was found in our study, as in the literature [13]. This female predominance could be explained by the action of hormones, domestic activities, and professional activities involving the carrying of heavy loads or repetitive movements.

5) *Diagnosis*

In our study, shoulder tendinopathy was the most common condition, accounting for 86.2% of cases, followed by chronic inflammatory rheumatism (6.4%) and omarthrosis (3.2%). This predominance of tendinopathies is well documented in the literature [4] [10] [14]. As the shoulder is the most mobile joint in the human body, the rotator cuff muscles are subjected to a great deal of stress, particularly during repeated movements or prolonged positions. This high level of mechanical stress could explain the high incidence of tendinopathy. Moreover, these pathologies are often the cause of work stoppages, particularly among manual workers [15].

The frequency of omarthrosis in our series (3.2%) is lower than that reported by Zomalheto *et al.* (10.8%) [4], Mokulayanga *et al.* (8.6%) [11] and Mang'oka *et al.* (12.5%) [14]. This difference could be explained by different socio-demographic characteristics, or by recruitment bias. As the shoulder is a non-weight-bearing joint, osteoarthritis is less frequent than in weight-bearing joints such as the hip or knee [16].

6) *Treatment*

The results of our study show that analgesics, local corticosteroid injections and

NSAIDs are predominant. Rehabilitation and non-pharmacological approaches were underused. The literature suggests that rehabilitation and exercise play a crucial role in the long-term recovery of patients with shoulder pain. Page *et al.* [17] have shown that well-structured rehabilitation programmes can significantly improve shoulder function and reduce long-term pain. Current guidelines say that active physiotherapy and patient education are standard treatment. Injections are second-line options. Surgery is indicated in cases where conservative treatment has failed, or in cases of massive rupture of the rotator cuff with major functional impairment. Preventing relapses relies on correcting professional and sporting movements and muscle strengthening [18].

Multicentre studies are needed to confirm this under-use of rehabilitation, a trend that could be explained by the low standard of living of the population. Indeed, an infiltration is less expensive than several rehabilitation sessions.

5. Conclusion

Non-traumatic painful shoulder is common in rheumatology practice in Lomé. Rotator cuff tendinopathy, chronic inflammatory rheumatism and shoulder osteoarthritis are the main aetiologies. Further studies on a larger sample of patients will confirm these data and assess the impact of non-traumatic painful shoulder on patients' quality of life.

Conflicts of Interest

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

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