

Hip osteoarthritis in Douala General Hospital: Clinical, radiological patterns and treatment options

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Abstract

Background: Hip osteoarthritis is a chronic debilitating disease that is treatable surgically by total hip replacement, sparingly available in developing countries, particularly in Africa. Few data are available on clinical patterns of hip OA in Cameroon.

Objectives: To describe the epidemiological, clinical and radiological profile of hip OA, and also treatment options offered to patients presenting with this condition at the Douala General Hospital, Cameroon.

Methods: After prior ethical clearance, a hospital-based cross sectional descriptive study was carried out, including all patients (one patient = one file) diagnosed with symptomatic hip OA during a 10 year period between January 2004 and December 2013 in Rheumatology and Orthopaedic Units at DGH. The Kellgren-Lawrence classification was used. Data was collected using pretested questionnaires and analyzed using Epi info version 7 and Microsoft excel 2007.

Results: Of the 9615 cases reviewed, 258 (2.7%) had symptomatic hip OA. The mean age was 53.3 ± 16.3 years (16 – 85 years). Females were more affected (56.4%). The mean BMI was 27.0 ± 4.3 ($19.7 - 41.9$) Kg/m². The prevalence increased with age over 50 years. The most frequent clinical findings were pain in the inguinal area, morning stiffness, limping, and limited range of internal rotation hip motion. Pain was usually moderate to severe in intensity. The most frequent radiological grade was K-L grade 4 (39.3%). The condition was unilateral in 73.1% of cases; it was unipolar in 65.4% (superior pole most affected); bicompartamental in 14.1%; tricompartmental in 20.5% of cases. There was no association between pain and radiologic grade of symptomatic hip OA. Out of the hundred with indication of hip arthroplasty, only forty-seven patients underwent surgical hip replacement therapy. The main limitation was financial.

Conclusion: Symptomatic hip OA has a female predominance. From the age of 50 years, females are more likely to develop the condition. There is poor correlation between symptoms and radiological findings.

Key words: Hip osteoarthritis, Pain, Joint replacement, Africa

Introduction

Osteoarthritis (OA) is a chronic degenerative joint disease¹ which affects more than 60% of the population older than 60 years and is associated with pain, disability, poor health status, and the frequent use of health care providers^{2,3}. The worldwide prevalence of symptomatic OA is estimated at 9.6% in men and 18% among women. The burden of OA can be measured by its impact on both quality of life and psychosocial status due to pain, impaired mobility and decrease in functional capacities^{1,2}. Although the spectrum of degenerative musculoskeletal disorders may be similar in developing and industrialized countries, the burden tends to be higher in developing countries due to delays in diagnosis and lack of access to specific interventions such as arthroplasty, joint replacement and rehabilitation⁴. Total joint replacement therapy in some cases (eg hip joint), known to provide relief and improve the quality of life in patients, is common in developed countries but not readily available and financially accessible to patients in low-income countries. Of 291 conditions evaluated as the cause of the global burden of disease and disability, hip and knee OA were ranked as the 11th highest contributors⁵. A hospital based study on OA in Cameroon showed that the hip is the second most affected site after the knee⁶. While the clinical characteristics of knee OA has been described in our setting, little is known about patterns of hip OA. Few orthopaedic centers offer total joint replacement therapy in

Cameroon making standard of care recommended for hip OA difficult to achieve⁷. The study aimed to describe the epidemiological, clinical and radiological profile of hip OA, and also identify treatment options offered to patients presenting with this condition at the Douala General Hospital, Cameroon.

Materials and Methods

Setting: The study was conducted in the Douala General Hospital, a 320 bed tertiary health center serving approximately 8 million inhabitants living in Douala, the economic capital of Cameroon, and the neighbouring regions. The DGH is a referral center, for rheumatology and orthopaedic patients with a well-equipped radiology service. Total hip replacement surgery is also routinely performed.

Study design: After prior approval from the local Ethical Review Board (ERB), a cross-sectional descriptive study was conducted to determine the main epidemiological, clinical and radiological characteristics of hip OA and the therapeutic options available in a tertiary referral health care center in Douala-Cameroon.

Data was retrospectively collected from the files of patients (one file=one patient) diagnosed with Symptomatic Hip Osteoarthritis (SHOA) at the Rheumatology and Orthopaedic Units between January 2004 and December 2013. Data was also collected directly from patients diagnosed with SHOA at the Outpatient Department (OPD) of these units, between April 2013 and December 2013. Clinical diagnosis of SHOA was based on the ACR criteria and radiographic classification was done using Kellgren-Lawrence classification. Patients with past or recent history of trauma, infection of the hip, and other inflammatory joint diseases were excluded.

Assessment: Data collected from each patient included; age, sex, residence, height in centimeters and weight in kilograms, past and recent medical history, duration of mechanical hip pain, visual analogue scale (VAS in millimeters ranging from 0 to 100) for pain during the last week, disease related clinical findings; pain was classified as low, moderate and severe when VAS ranged respectively from 0-49, 50-79 and 80-100. To define overweight and obesity, the body mass index [weight / (height²) in Kg/m²] was used. Overweight was defined as a BMI \geq 25.0 Kg/m² while obesity as a BMI \geq 30.0 Kg/m². Radiographic assessment was done using weight bearing anteroposterior and lateral views of the hip. Radiographs were read by the principal investigator, using Kellgren and Lawrence grades (0-4). Kellgren and Lawrence (KL) staging of OA was calculated including joint space measurement with identification of Joint Space Narrowing (JSN), subchondral bone thickening and the presence of osteophytes.

Statistical analysis: Categorical variables were presented as frequencies and continuous variables as mean and standard deviation. Statistical significance was considered at p values < 0.05. Data were analyzed using the Stata® software (College Station, Texas, USA).

Results

A total of 9615 cases were reviewed during the study period and 156 fulfilled our inclusion criteria: 59.6% (93/156) from the Orthopaedic Unit and 40.4% (63/156) from the Rheumatology. The mean age was 53.3 \pm 16.3 years (16 – 85 years), and the most affected being in the 60 – 69 year age group. Females were more affected than males; 56.4% and were significantly more likely to develop the condition than males at 50 years or older (OR = 0.7; 95% CI = 0.02-0.20; p<0.01); 61.5% patients were overweight. The mean BMI was 27.0 \pm 4.3 (19.7 – 41.9) Kg/m². Twenty two (14.1%) patients had a history of trauma to the affected hip. Twenty eight (18%) patients had a family history of symptomatic hip OA. The right hip was affected in 73.2% (123/156) of cases. The pain was unilateral in 95.5% (149/156) of cases. The mean duration of symptoms was 4.1 \pm 3.5 (3 months – 15 years). Pain was graded as moderate to severe (55.1% and 38.5% respectively); with the most common location being the inguinal area in 140 (89.7%); radiating to the knee in 28 (18.0%), the anterior thigh in 24 (15.4%). Ninety four (60.3%) of our patients had a limp. The most frequent was the antalgic limp, occurring in 82 (52.6%) of our patients (Table 1).

Table 1: Clinical characteristics of symptomatic hip OA

Characteristics	Items	Frequency
Age (years, %)	<40	34(21.8)
	40-49	26(21.6)
	50-59	34(37.8)
	60-69	40(21.6)
	70-79	20(12.2)
	>80	2(3.4)
Sex	F/M	88/68
	BMI, mean	27.0 \pm 4.3
BMI, n (%)	< 25	60 (38.5)
	>25	96 (61.5)
Symptoms pain†, n(%)	Inguinal region	140 (89.7)
	Low back	18(11.5)
	Buttocks	6 (3.9)
	Knee	2(1.3)
Pain duration, n (%)	<1 year	20 (12.8%)
	1-5years	98 (62.8)
	6-10 years	26 (16.7)
	>10 years	12 (7.7)
VAS pain, n (%)	Low (0-4)	10 (6.4)
	Moderate (5-7)	86(55.1)
	Severe (8-10)	60(38.5)
Other symptoms††, n (%)	Limping	94(60.3)
	Limb length discrepancy	31 (19.9)
	Muscle wasting	13(8.3)
	Low back pain	25 (16.0)
	Coarse crepitus	9 (5.7)

† A patient could have more than one location of pain at a time

†† A patient could present with more than one symptom at a time

Table 2 : Range of movements in our study participants

Range of movement	Frequency (n = 156)	(%)
*Limited ROM	108	69.2
Limited flexion	65	41.7
Limited internal rotation	97	62.1
Limited external rotation	54	34.6
Limited abduction	32	20.51
Limited adduction	9	5.8
Limited extension	11	7.1
Normal ROM	48	30.8
Total	156	100

Table 3: Radiographic findings in the study population

Poles involved	Frequency (n = 156)	(%)
Unicompartmental (n=102)		
Superior only	72	46.2
Medial only	18	11.5
Axial only	12	7.7
Bicompartmental (n=22)		
Superior + medial	18	11.5
Superior + axial	2	1.3
Medial + axial	2	1.3
Tricompartmental (n=32) (Superior + medial + axial)		
	32	20.5
Total	156	100

One hundred and eight (69.2%) of our patients had limitations in the range of movement in the affected hip joint(s). The most involved planes of movement were internal rotation in 97(62.1%) (Table 2).

Radiological findings were unilateral in 92.3% of cases. The most frequent radiological grade was K-L grade 4 (39.3%). Grade 3 and grade 2 occurred in 44 (26.2%) and 58 (34.5%) patients respectively. It was unipolar in 65.4% (superior pole most affected); bicompartmental in 14.1%; tricompartmental in 20.5% of cases (Table 3).

Table 4: Association between age and sex

Age	Female (%)	Male (%)	P value	Total (%)
< 50	12 (20.0)	48 (80.0)	< 0.001	60 (100)
≥ 50	76 (79.2)	20 (20.8)	< 0.001	96 (100)
Total	88 (56.4)	68 (43.6)		156 (100)

Table 5: Relationship between radiologic grades and severity of pain

KL Grade	Mild pain	Moderate pain	Severe pain	P-value	Total
Grade 2	2 (3.5)	34 (58.6)	22 (37.9)	0.69	58 (100)
Grade 3	6 (13.6)	28 (63.6)	10 (22.7)	0.09	44 (100)
Grade 4	4 (6.1)	30 (45.5)	32 (48.5)	0.29	66 (100)

Compared to males, females below the age of 50 years were less likely to have symptomatic hip OA (OR = 0.7; 95% CI = 0.02 – 0.20, p < 0.001) whereas at 50 or above, females were 15 times more likely to have symptomatic

hip OA (OR = 15.2; 95% CI = 4.8 – 47.2, p < 0.001) (Table 4). There was no association between pain and radiologic grade of symptomatic hip OA (Table 5).

Treatment of OA in our study population included those in use of NSAIDs in 140 (89.8%), analgesics in 156 (100%), walking aid and braces in 30 (19.2%). Indication for THR was established for 100 (64.1%) patients, all with radiological KL grade III to IV associated to moderate and severe pain. Total joint replacement therapy was performed on 47 (30.1%) patients. The procedure used was Kocher-Langenbeck surgical approach with cemented implant in all the cases. Immediate postoperative complications were few (one massive hemorrhage and pulmonary embolism). One case of femoral component loosening was observed, treated by surgical revision.

Discussion

The aim of this study was to describe the clinical and radiological characteristics as well as the treatment options of patients with SHOA in Douala-Cameroon. The results revealed that SHOA (symptomatic hip OA) was more common in females, in or around their fifth decade. K-L grade 4 and superior pole involvement were the most frequent radiographic findings, and there was a poor association between the severity of radiological stage and the intensity of pain.

The study findings of SHOA being more common with increasing age are similar to that in other studies^{4,8,9}. This is probably due to ageing related changes that occur in the cells and extracellular matrix of the articular cartilage such as decreased thickness, increased proteolysis, advanced glycation and calcification, which lead to biomechanical dysfunction and tissue destruction⁹. Mean age was 53.3 years in our study and this was similar to that in Togo but lower than in the USA and Italy, 63 and 74 years respectively^{4,11,12}. Community based studies are determinant to make a true appraisal of the age of SHOA in African populations. Worth noting is the fact that the mean age of patients with rheumatic conditions in hospital based study in Yaoundé was 52.7 years⁶.

Females were more affected in this study. More recent studies^{2,5,9,13} report similar findings. In addition, females were significantly more affected at 50 years or older. This may be related to hormonal changes as women enter menopause. However, a few authors^{8,14} showed no clear relationship between female hormonal tendencies and hip OA and they suggested that the relationship was probably too complex or other factors yet to be determined were responsible for the increased prevalence in females above 50 years.

Being overweight or obese probably increases the mechanical load across the hip joint. The findings of the study was consistent with other studies^{6,15,16} that reported a significant association between being overweight/obese and developing hip OA. Even though the association of increased BMI and knee OA is certain¹⁷, some authors debate about overweight and SHOA^{2,18}.

Hip pain in this study as in others was described as anterior, at the inguinal area, and radiating to the anterior thigh and knee^{15,19,20}. Chronic long standing pain and limping were the most frequent presenting complains, similar to what was described in other African studies, and this may be consistent with lack of accessibility to adequate health care facilities and delays in seeking specialized health care providers^{4,6}. This point is confirmed by the fact that most of our patients are seen with severe radiographic changes (KL Grade 4) at the first consultation, and supported by the lack of association between pain and radiologic grade²⁰. This raises the problem of inadequate care provided to patients seen late in the course of this disease, thereby making it difficult to prevent aggravation of ongoing degenerative processes in weight bearing joints. This highlights the need to create awareness amongst patients on the importance of early consultation in order to promote strategies for controlling risk factors. Symptoms can be reduced by information on importance of changes in lifestyle, adequate and regular exercises, braces and other forms of joint protection; All these measures are useful to reduce OA progression^{1,16,21,22} particularly in an environment where joint replacement is not readily accessible.

Among the patients suitable for THR, only 1/3 benefited from surgical treatment of SHOA. Even though the surgical procedure is offered by the General hospital, very few could access the financial requirements, rendering the standard care at this stage of the disease difficult^{21,22}. It becomes important to emphasize on early detection of SHOA, to ensure effective low progression of joint lesions through simple measures accessible in low-income countries. Advocacy may also be important in training adequate health care providers in rheumatology, orthopaedic surgery and physiotherapy in our African setting to make recommended standard of care available and accessible to our patients.

The main limitation of this study was the lack of information about functional impairment related to SHOA and also the primary or secondary aetiology of SHOA. Severity of radiographic changes of knee OA in Cameroon has been associated with functional impairment rather than pain, this is still to be analyzed in the case of hip OA.

Conclusion

SHOA appears more prevalent in women older than 50 years. There was a poor association between the severity of radiological stage and the intensity of pain. Early intervention through reduction of factors associated with OA progression may improve outcome in sub-Saharan countries where surgical therapeutic interventions are not readily accessible. Community-based prospective studies are needed to better appreciate risk factors and functional impairment associated with SHOA.

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