PATTERNS OF KNEE, HIP AND HAND OSTEOARTHRITIS IN KENYATTA NATIONAL HOSPITAL

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ABSTRACT

Background: Osteoarthritis (OA) is one of the most common chronic rheumatic disorders and is associated with significant morbidity and disability. Few studies examined the spectrum of rheumatic diseases in sub-Saharan Africa. Obesity is not only a risk factor for incidence of OA but also for the progression of the disease.
Objective: The aim of the study was to determine the patterns of knee, hip and hand osteoarthritis as well as obesity prevalence in the patients with established disease.
Design: A cross-sectional descriptive study.
Methods: we examined patients with knee, hip and hand osteoarthritis to describe the patterns of osteoarthritis in 201 patients who fulfilled the ACR diagnostic criteria. Their body mass indices were also studied to determine the prevalence of obesity in this cohort of patients.
Results: A total of 201 patients with knee, hip or hand osteoarthritis were studied. Of these participants, 77% had knee OA, 15% hip OA, 3% hand OA and 5% had combined knee and hip OA. Obese participants were 41% and 32% were overweight. There were 89 (44.3%) participants with bilateral knee or hip disease while 112(55.7%) had unilateral disease. Obesity was more common in participants with knee than in hip OA (45.3% vs 10.3% respectively) P < 0.001. The bilateral disease was higher in obese (55.2%) and overweight (44.6%) participants compared to participants with normal body mass indices (26.5%) P value < 0.007.
Conclusion: Knee OA was very common and the majority of the patients were overweight and obese. Bilateral OA was more prevalent in obese and overweight participants compared to normal weight participants. Obesity is an easily modifiable risk factor for knee OA so it can be made a valid target for preventing as well as halting the progression of OA.

INTRODUCTION

Osteoarthritis (OA) is the most prevalent of chronic rheumatic disorders in the world (1). The prevalence is increasing as populations are aging and epidemic obesity is in the rise. OA is estimated to be the fourth leading cause of disability in most countries worldwide (2). Worldwide, around 10% of the population who are 60 years or older have symptomatic problems attributable to OA (3). Knee, hip, hand and spine are typically the affected joints. Knee OA is the most common form and it is associated with profound clinical and public health burden (4). Risk factors include obesity, joint injury, previous joint surgery and occupational bending and lifting. Of these, obesity is the most powerful and modifiable risk factor for the development of OA (5). It has been shown that 24% of surgical cases due to knee OA can be prevented if overweight and obese reduce their weights by 5Kg or until they keep their BMIs in the recommended range (6). On the other hand, maintaining an ideal weight not only reduces the onset of the disease but also alleviates the pain, reduces the disability and improves the quality of life (7,8). The access to modalities of treatments of the established disease, particularly the surgical aspect of it, is beyond the reach of the most of the people living in the developing countries like Kenya. We do not have local data on the magnitude of the disease in our set up as well as the prevalence of obesity in this population with the disease. For these reasons and because obesity is modifiable risk factor, we examined patients with specific joint osteoarthritis and determined the obesity prevalence in a simple descriptive cross-sectional hospital based study.

MATERIALS AND METHODS

Subjects: Participants of this study were patients with primary knee, hip and hand OA who were attending the outpatient rheumatology and orthopaedic clinics in Kenyatta National Hospital during the periods between August and December 2012. A total of 2100 patients with rheumatic diseases, (88%) from the orthopaedic and rheumatology clinics (12%) were screened for

diagnostic label of knee, hip or hand OA confirmed by ACR criteria. Of them, 210 (10%) patients were eligible so 1890 (90%) patients were excluded. Nine patients declined to give consent. In the final analysis, 201 patients were studied. Their consent was sought. All procedures were in accordance with the institutional ethical standards and the proposal was approved by the KNH/UoN-Ethics and Research Committee.

Data collection: On recruitment, socio-demographic data was obtained followed by medical history and anthropometric measurements which were used to compute Body Mass Index (BMI). X-rays for the symptomatic osteoarthritic joint was done and interpreted. Erythrocyte Sedimentation Rate (ESR) was done for all the patients as well as rheumatoid factor.

Statistical analyses: Statistical Package for Social Scientists (SPSS) version 17 was used to analyze the data. Statistical analysis to establish the prevalence of knee, hip and hand OA as well as to determine the prevalence of obesity was done. Continuous data e.g. age, weight, height, BMI was presented as means, standard deviations, and medians. Categorical data such as gender, physical activities, family history and smoking habits were presented in proportions, frequencies and percentages. Data summaries were presented using tables, pie charts and graphs.

RESULTS

Among the 2100 patients with rheumatic diseases, 201 patients had knee, hip or hand AO giving a prevalence of 9.6%. Of the 201 with OA, 165(82.1%) were females. The mean age (SD) was 61.4(11.1%) with a median duration of the disease for 5 years. Of the 201 participants, 77% had knee OA, 15% hip OA, 3% hand OA, and 5% combined knee and hip OA (Figure 1).

The mean BMI was 29 Kg/M². The obese participants were 41% while 32% were overweight (Figure 2). Participants with knee OA had higher BMI (mean 29.8 Kg/M²) than participants with hip OA(24.5 Kg/M²) P= 0.001. Half of the patients with knee OA had bilateral disease while 27.5% of patients with hip OA had bilateral disease. Bilateral disease was more prevalent in obese (52.4%) and overweight (44.6%) participants than participants with normal weight (26.5%) P= 0.007 (Figure 3). Obesity was more common in participants with knee OA (45.3%) compared to hip OA (10.3%) P= 0.007 (Figure 4).
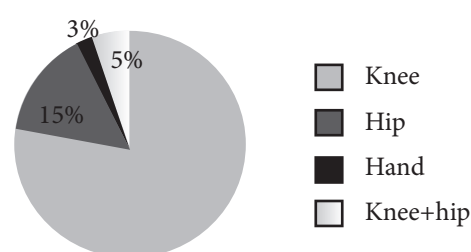
Table 1
Distribution of variables according to the knee and hip OA

| Variable	Knee	Hip	OR (95% CI)	P value
Age	62.1 (10.3)	59.8 (13.6)	-	0.309
Sex				
Male	21 (13.9%)	10 (34.5%)	1.0	
Female	130 (86.1%)	19 (65.5%)	3.3 (1.3-8.0)	0.013
BMI				
Normal	31 (20.7%)	17 (58.6%)		
Under weight	1 (0.7%)	2 (6.9%)	0.3 (0.0-3.2)	0.305
Over weight	50 (33.3%)	7 (24.1%)	3.9 (1.5-10.5)	0.007
Obese	68 (45.3%)	3 (10.3%)	12.4 (3.4-45.6)	<0.001

DISCUSSION

The studies on the prevalence of OA in sub-Saharan Africa, particularly in Kenya are limited. Few studies evaluated the spectrum of the rheumatic disease in Kenya and showed that osteoarthritis is the most common rheumatic disorder (9). Obesity was shown to be a strong modifiable risk factor for OA development as well as progression of the established disease. However, little is known about the magnitude of this risk factor. We set out to determine the patterns of OA in a tertiary referral hospital. We also examined the body mass indices of these patients.

The study population was middle aged and elderly, predominantly females. Knee AO was the most common form of the disease. This is comparable to what Oniankitan, *et al* (10), showed in his study on the prevalence and topographic patterns of OA in Togo where he found 91% of patients had knee OA (n=1085) and 85% were females. Our findings also suggest the prevalence of OA of knee, hip and hand accounted for 9.6%. This is also in agreement with what Oniankitan *et al* (10) showed in his study (8.9%). However, several other studies which examined the spectrum of rheumatic diseases showed higher prevalence figures for OA (20% - 40%) (9,11). In these studies, secondary OA was not excluded which could probably lead to higher prevalence.

Obesity and osteoarthritis: Obesity is a chronic metabolic disease which poses serious risks for the development of any serious illnesses including hypertension, diabetes mellitus, heart disease and musculoskeletal disease. The evidence linking obesity to OA has been accumulating. The risk of developing OA in overweight and obese patients has been the topic of many studies. However, the epidemiological evidence is stronger for knee than hip. In this study we found high prevalence of overweight and obesity in patients with osteoarthritis (32% and 41% respectively) (Figure 2).

Figure 1
Distribution of joint diseases in 201 patients with OA

Figure 2
BMI distribution of the participants with osteoarthritis (N: 201)
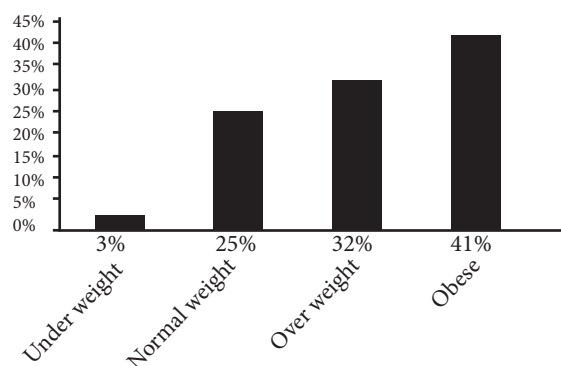
This is in accordance with what Stürmer *et al* reported in his study on the association of overweight and obesity with OA of the knee and hip (46.4%, 31% respectively) (N=809) (12). We observed that bilateral disease increases with the increasing BMI. For example, we found that 44.3% of the participants had bilateral knee or hip OA. The obese and overweight participants were more likely to have higher rates of bilateral disease compared to participants with normal BMI.

Figure 3
Comparison of BMI distribution in cases of unilateral and bilateral OA
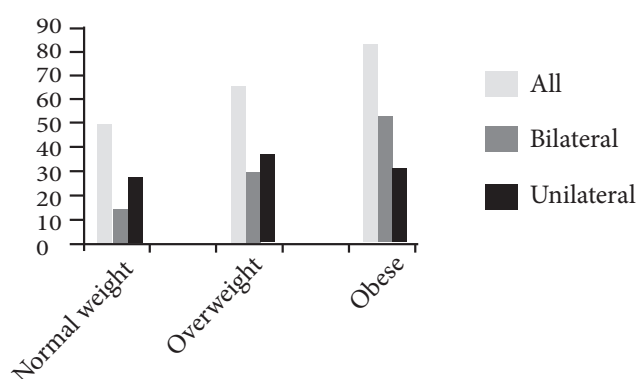
The increased prevalence of overweight and obesity in patients with knee and hip OA raised questions on whether it is causal or consequence. However, there is overwhelming evidence that obesity precedes the incidence of OA by so many years particularly the knee OA (13). Many well-designed studies over the last three decades have also borne out a statistically significant link between obesity and OA occurrence. Coggon *et al* (14) in a population-based case control study (n=525 patients) demonstrated that the odds ratio for developing knee OA was 0.1 (95% CI 0.0-0.5) with a BMI less than 20 Kg/M^2 versus 13.6 (95% CI 5.1-36.2) when BMI is more than 36 Kg/M^2 (6). The risk of knee OA increased by 36% for every 2 units of BMI (5Kg) of weight gain. Although these studies show that OA of knee is consistently related to obesity, there have been conflicting results regarding the relationship

of body weight to the development of OA of the hip. In a population based case control study, Cooper and colleagues (14) showed that participants with BMI of 28 had 1.7 increased risks for hip OA development compared to those with BMI of 24.5Kg/M^2 (16). However, Spector (15) and Tepper and Hochberg (16) did not find any relationship between body weight or body mass index and the occurrence of hip OA. Our study was not powered to make an association between overweight and obesity and osteoarthritis of the knee and hip.

Our study had several limitations. First, we had looked at the primary OA in specific joints which may underestimate the true magnitude of OA. Secondly, this was a hospital based study which may not necessarily reflect the true picture of OA in the general population. Finally, having control group would help determine the true association of obesity with OA of knee and hip. In our sample of population, we found knee OA to be very common. Obesity is also prevalent in these patients with alarming figures.

We recommend studies to evaluate the impact of weight loss in patients with OA. Secondly, we also recommend primary and secondary prevention programs aimed at reducing obesity.

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