

Clinical and Radiological Characteristics of 104 Knee Osteoarthritis Patients at First Presentation

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ABSTRACT

Osteoarthritis (OA) is the commonest articular disease in the elderly people. It represents a heterogenous group of conditions resulting in common histopathological and radiologic changes. Current view holds that OA is a disease of the entire joint organ and not of cartilage alone. A prospective study of all elderly patients aged 40 years and above with knee pain was conducted. Plain radiographs of the affected knee were requested. People below 40 years and those with traumatic pain or polyarticular involvement were excluded. The study was carried out in a private rheumatology clinic over three years (July 2009- June 2012). OA constituted 30.9% of all rheumatology cases seen over the studied period. Male constituted 30.8% and female made up of 61.2%, with a male: female ratio of 1:2.3. 76.9% presented after one year duration of onset of pain. Medial compartment of the knee was affected in 76.9% of patients on plain radiograph. Considerable variation occurred with pain severity and radiographic findings. 65.4% of the patients were either overweight or obese. Hypertension was the commonest co-morbid condition (48.1%). The results of knee radiographs should not be used in isolation when assessing individual patients with knee pain. The clinical presentations must be considered alongside the plain radiographic findings.

Keywords: Osteoarthritis, Presentation, Clinical, Radiological, Nigeria

INTRODUCTION

Osteoarthritis (OA) of the knee is a major cause of disability among the aging population. The hallmark of OA is loss of articular cartilage^[1]. The exact cause of pain in OA is difficult to understand because articular cartilage does not contain pain fibres, and so cannot be the direct cause of pain OA^[2]. The implicated sources of pain however are the other joint structures which contain pain fibres, these include the joint capsule, periosteum, ligaments, muscles, menisci and the synovium^[3,4].

The association between clinical presentations and radiographic findings in OA is poor^[5]. However, plain radiographs remain the usual means for assessments of osteoarthritic changes^[6]. The aims of this study were to determine the clinical presentations of knee OA among our people, the severity of pain at first presentation as related to the duration of symptoms and to determine the co-morbid conditions associated with OA of the knee.

Materials and Methods

This is a prospective study of all patients, aged 40 years and above. The study was carried out in a private rheumatology clinic in South west Nigeria over a period of 3 years (July 2009- June 2012). Inclusion criteria were age above 40 years and presence of knee pain. Excluded from the study were patients below 40 years, history of traumatic pain, polyarticular involvement and presence of constitutional symptoms of fever, malaise, weight loss, and loss of appetite.

The biodata of the patients were obtained, and the body mass index (BMI) was determined. Detailed articular history and examination was carried out with attention to the knees. Pain severity was determined by numerical rating of 1 to 10 points. Pain was graded as mild with numerical rating of 1-3, moderate with numerical rating of 4-6 and severe 7-10.

Systemic history and examinations were also carried out to determine co-morbid conditions associated with OA of the knee. Full blood count (FB) and erythrocyte sedimentation rate (ESR) were determined in all patients, and blood sugar determined where necessary. Plain radiograph of the knee-anteroposterior and lateral view were requested and reading done by the Radiologist. Radiological criteria used included

1. Narrowed joint space
2. Presence of osteophyte
3. Presence of subchondral cyst
4. Presence of subchondal sclerosis

RESULTS

OA made up of 30.9% of all rheumatology cases seen over the 3 years study period. There was male to female ratio of 1:2.3. Age range was 40-90 years. Majority of patients (76.9%) presented more than 1 year after the onset of pain. moderate pain at presentation was the commonest pain history (74%), hypertension and BMI above 25 were the commonly associated co-morbid conditions. The medial compartment of the knee was the commonly affected compartment (79.6%), while patello-femoral was least affected (1.9%).

Table 1 shows the spectrum of rheumatology cases seen over three years, table 2 shows the clinical and radiologic findings in the patients, while table 3 shows the demography, pain severity, and co-morbid conditions in the studied patients.

DISCUSSION

OA as earlier documented in studies is the commonest articular problem in the aging population⁷. It constituted the highest (30%) number of patients seen in this study, which agrees with earlier studies. Earlier studies also supported female preponderance of knee OA occurrence⁸. The ratio of 1:2.3 obtained in this study is however lower than the previous hospital based studies from Nigeria^{9,10} and Ivory coast¹¹.

Literature has documented that women lose cartilage in the knee at a faster rate than men^[12]. While the higher burden of knee OA in women is well recognized, an understanding of why this occurs is lacking. In a study of asymptomatic volunteers between 50 and 79 years of age, magnetic resonant imaging (MRI) showed women lose cartilage in the knee at four times the annual rate in men in the tibia and three times that is the patella^[12]. The author is of the opinion that the difference in the ratio could be due to health seeking habit between the two sexes with women being health conscious than men.

Most people (76.9%) presented after a year of onset of pain, various reasons can be adduced for this. Most of the people involved in the study were illiterate and therefore may not pay particular attention to their health, some might feel that the pain arises because they were farmers and traders involved in walking long distance and carrying heavy loads. Delayed hospital presentation may also be related to visit to traditional healers, visit to chemist for out of counter medications by these patients. Some of the patients may even feel that the problem is mainly a spiritual one and no need for medical intervention. The delay in presentation may be partly responsible for moderate pain presentation by most patients. Many patients may also have moderate pain intensity because they do not use appropriate drug or right dose medications. The age at presentation for men was 40-86 years, while it was 40-90 years for women. The mean age for men was 51 years while for women it was 53yrs. OA generally starts from age of 40 years and the frequency increases with age.

Sixty-eight (65.4%) of the patients were overweight or obese. Increase body weight without associated compensatory adaptation in knee joint anatomy would increase the stress and stains in the knee joint during walking. A number of observational studies have indentified obesity as a risk factor for knee OA, with an increased risk for women

compared with men. Body mass index (BMI) is a significant and independent predictor of the onset and progression of knee OA^[13,14] and this effect is stronger in women than men^[15]. In the Framingham study, the relative risk of developing knee OA in overweight individuals was 2.07 times greater for women and 1.51 times greater for men than for those individuals with the lowest body weight^[16]. Genetics of osteoarthritis and lifestyle (GOAL) case-control study identified BMI as a factor that increased the risk of developing knee OA, with the risk for knee OA being greater in women than in men^[17]. The medial compartment of the knee was the leading compartment affected in our patients. Several literatures have documented that medial compartment is the mostly affected compartment in OA of the knee. Eric Vignon *et al.*, in the study documented that joint space narrowing affected the medial femoro-tibial compartment in 52 knees and the lateral compartment in 6 knees out of 58 patients studied^[18].

In conclusion, further studied will be needed to further characterized OA patients in our community by determining the progression of the disease. However, previous studies have shown that some osteoarthritis of the knee remain stable for years while others undergo rapid progression.

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Table 1: Spectrum of Rheumatology Cases Seen Over 3 Years (July 2009- June 2012)

Serial No	Condition	Number	Male	Percentage	Female	Percentage
1.	Osteoarthritis	104	32	30.8	72	69.2
2.	Rheumatoid arthritis	12	4	33.3	8	66.7
3.	Cervical spondylosis	36	23	63.9	13	36.1
4.	Low back pain					
	Lumbar spondylosis	25	14	56	11	44
	Disc herniation	6	2	33.3	4	66.7
	Spondylolisthesis	4	3	75	1	25
	Non-specific low back pain	38	26	68.4	12	31.6
5.	Gout	28	22	78.6	6	21.4
6.	SLE	6	1	16.7	5	83.3
7.	Shoulder pain syndrome	12	4	33.3	8	66.7
8.	Hypermobility syndrome	8	0	0	8	100
9.	Fibromyagia	6	0	0	6	100
10.	Polymyalgia rheumatica	2	0	0	2	100
11.	Bursitis	4	3	75	1	25
12.	Trigger finger	16	6	37.5	10	62.5
13.	Sjorgren's	1	0	0	1	100

	syndrome					
14.	Reiter's syndrome	1	1	100	0	0
15.	Septic arthritis	2	0	0	2	100
16.	Lateral epicondylitis	2	2	100	0	0
17.	Medial epicondylitis	2	2	100	0	0
18.	Scleroderma	2	0	0	2	100
19.	Psoriatic arthropathy	1	1	100	0	0
20.	Plantar fasciitis	7	2	28.6	5	71.4
21.	Carpal tunnel syndrome	3	1	33.3	2	66.7
22.	Archilis tendinitis	8	1	12.5	7	87.5
		336	160		176	

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Table 2: Clinical Radiological Characteristics of the 104 Patients

	Male		Female
Number of knee affected	Unilateral	20	43
	Bilateral	11	30
Pain		48	56
Pain duration before presentation (months)		30	19
Joint swelling		24	32
Morning stiffness (less than 30 minutes)		38	43
Crepitus		46	54
Presence of nocturnal pain		04	07
Osteophytes		48	56
Narrowed joint space		36	47
Predominant compartment	Medial	36	44
	Lateral	06	16
	Patella-femoral --		02
Subchodral cyst		12	18
Subchondral sclerosis		02	06
Valgus deformity		04	08
Varus deformity		02	05

Table 3: Patients Demography, Pain Severity and Associated Morbidity

	Sex	Age range (yrs)	Mean age (yrs)	Mild pain	Moderate pain	Severe pain	BMI Greater than 25	hypertension
Male	48	40-86	51	08	30	10	26	19
Female	56	40-90	53	10	47	09	42	31
Total	104			18	77	19	68	50