Osteoarthritis of the knee in Nigerians

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SUMMARY Eighty-one patients with 116 osteoarthritic knees were seen by the author at the University College Hospital (UCH), Ibadan in six years. Below the age of 50 the disease was significantly commoner among Nigerians than Caucasians; 39.5% of our patients were less than 50 years old, compared with 1.1% of Caucasians. In contrast with the latter group, trauma was apparently an insignificant predisposing factor of knee degeneration in our patients. In some cases osteoarthritis was associated with severe valgus deformity in rather young patients, suggesting a probable causal relationship. Multiple joint osteoarthritis was significantly less common in Nigerians than in Caucasians.

Key words: Africa-western, Nigeria.

Although osteoarthritis is a frequent and important cause of pain and disability worldwide, its pattern of joint involvement varies from place to place.¹ For instance, primary osteoarthritis of the hip is common in Caucasians² but it is very rare in black Africans^{3,4} and in Hong Kong Chinese.⁵ Such differences in the prevalence of the disease have been attributed to genetic and environmental factors (in the form of occupational stresses and individual episodes of trauma).⁶

Information obtained from studies of the pattern of the disease in different continents could be important in planning for control and prevention and might contribute to a further understanding of the pathogenesis of the disease.⁶ Although adequate information exists on the pattern of the disease in the developed countries,^{2,6} there are very few studies from tropical Africa.⁴ Apart from the studies of the hip⁴ we were unable to find any previous reports on how the pattern of osteoarthritis of the major joints in this region compared with the pattern of the disease elsewhere.

Solomon³ stated that osteoarthritis of the knee was common in black South Africans, but he did not present any specific data.

This paper reviews 116 osteoarthritic knees in 81 patients seen by the author at UCH, Ibadan in a six-year period.

Patients and methods

The case files and radiographs of 81 patients with

osteoarthritis of the knee seen by the author in the Orthopaedic Clinic, UCH, Ibadan between 1 January 1977 and 31 December 1982 were reviewed. All the patients were Nigerian Negroes. In most cases the x-rays were not carried out in a weight-bearing or stressed position as suggested by Ahlback.⁷ The joints were graded for osteoarthritis on a scale of (normal) to 4 by the criteria of Kellgren and Lawrence⁸: grade 1, doubtful osteoarthritis; grade 2, minimum; grade 3, moderate; grade 4, severe osteoarthritis. Only grades 3 and 4 (moderate and severe osteoarthritis) were considered in this study because of the difficulty in defining the lesser degrees of osteoarthritis. Thus the presence of osteophytes alone was not accepted as evidence of osteoarthritis of the knee; rather the radiographic demonstration of narrowing of the joint space and/or subchondral sclerosis was a precondition for inclusion in this series.⁹

Results

AGE AND SEX INCIDENCE

The age at onset of symptoms varied from 25 to 90 years, mean 52 years (Table 1). The mean for males was 49.4 years (range 25-90), that for females 52.2 years (range 27-85). Thirty-two patients (39.5%) were under the age of 50. Fifty-four of the 81 patients (66.7%) were women, a sex ratio of 2:1.

DISTRIBUTION OF JOINT INVOLVEMENT

In 35 patients (43.2%) both knees were affected. The right knee alone was involved in 30 cases and the left knee alone in 16. Narrowing of only one

Table 1 Clinical findings in Nigerians with gonarthrosis

	Males (n=27)	Females (n=54)	Total (n=81)
Mean age (range) years	49.4 (25-90)	52.3 (27-85)	52 (25-90)
Mean duration (range) of symptoms	3 yrs 3-7 mos (2 wks-12 yrs)	3 yrs 1-4 mos (2 wks-20 yrs)	3 yrs 2-5 mos (2 wks-20 yrs)
Polyarticular features		4/54	4/81
Obese	1/27	14/54	15/81
Occupation:			
Petty trading	2	18	20
Domestic work		27	27
Subsistent farming	9	5	14
Unskilled labourers	8		8
Teaching	2	4	6
Skilled labourers + professionals	6		6

the three articulations of the knee was observed in 103 of the 116 knees. Thus only 13 knees (11.2%) had combinations of more than one articulation with narrowing of the joint space.

INJURY

A history of previous trauma or radiological evidence of an injury were present in three of the 27 males (11.1%) and in none of the females.

OBESITY

Any person more than 10% above average weight was considered to be obese,⁶ and by this definition 3.7% (1) of the males and 25.9% (14) of the females were overweight. One obese female had bilateral genu varum, and another had genu valgum.

KNEE ANGULATION

A varus knee was defined as one with tibiofemoral angle of 4° of valgus or less, a neutral knee as from 5° to 9° of valgus, and a valgus knee as one with 10° or greater of valgus. This division was based on the normal valgus of 7° as reported by Steindler¹⁰ ±2° latitude in the neutral group, even though it has not yet been shown that this standard is applicable to West Africans. By these criteria 16 patients (19.8%) presented with genu valgum (five bilateral and 11 unilateral), one patient had varovalgus deformity, and another had bilateral genu varum. Thus valgus and varus deformities occurred in 22 and three knees respectively. One patient had genu recurvatum.

OTHER FEATURES

Domestic work and petty trading were the predominant occupations for 45 females (Table 1).

Most (17) men were unskilled labourers or subsistent farmers. The mean duration of symptoms when first seen was 3 years 2.5 months (range two

weeks to 20 years). Pain, the cardinal symptom, was present in all cases. Forty-one patients (50.6%) also complained of stiffness and difficulty with squatting. Twenty-six patients (32.1%) presented with knee swelling, and 19 (23.5%) with limping and knee deformity. One patient had guinea worm arthritis and one, loose bodies in the knee.

Degenerative disease was also found in the lumbar spine of eight patients. None of the 81 patients was known to suffer from sickle cell disease, and few were severely crippled by the degenerative disease. Most patients improved sufficiently on conservative measures to require no surgery. Upper tibial osteotomy was performed on 10 knees and patellectomy on two others. Double osteotomy, arthrodesis, and removal of loose bodies were each carried out on one knee. The early results of upper tibial osteotomy appeared satisfactory in seven of the 10 knees with regard to retention of mobility, relief of pain, and achievement of stability. The other three patients each had delayed union, persistent instability, and pain. Stiffness of the knee and lack of adequate mobility occurred in the only patient who had upper tibial and supracondylar femoral osteotomies (double osteotomy) for osteoarthritis and severe valgus deformity.

Discussion

In contrast with the hip,⁴ the pattern of osteoarthritis of the knee in Nigerians was similar in many respects to the pattern in Caucasians, but some differences were noted. As in reports elsewhere⁵ females predominated in this series. However, the female preponderance was less marked in our series, perhaps because many of our patients were relatively young.⁷ It is known that the female to male ratio in this disease increases with age.⁷

Under 50 years of age osteoarthritis of the knee

was more common in Nigerians than in Caucasians. About 40% (32 out of 81) of our patients and 1% (3 out of 281) of Swedish patients⁷ with degenerative disease of the knee were less than 50 years old. The reason for this younger age of our patients is unknown, and no obvious predisposing cause was found in most of the cases. Hernborg and Nilsson¹¹ suggested that the onset of symptoms at an early age was unfavourable with regard to the development of pain.

Trauma was apparently a less significant factor in osteoarthritis of the knee in Ibadan patients than in Caucasians. In Caucasian males trauma has been found to be associated with osteoarthritis of the knee in about half of the cases.⁶ It is possible that some of our patients had forgotten previous injuries; however, it may be that differences in occupational hazards partly accounted for this difference in the prevalence of knee injuries. For instance, most of the men studied by Kellgren and Lawrence⁶ were coal miners, in whom knee injury is quite common.

The role of obesity as an aetiological factor in osteoarthritis remains unresolved. Large population studies of patients with osteoarthritis have shown an increased incidence of degenerative arthritis of the knee in obese individuals.^{2 6 12} Other investigators,¹³⁻¹⁵ however, have been unable to find an increase in body weight among women with degenerative changes of the knee as compared with women with normal knees. About a quarter of the females in our series were overweight, but the question of whether obesity relates to the aetiology of osteoarthritis of the knee cannot be resolved from our data.

It is not clear whether osteoarthritis develops more frequently in patients with valgus or varus deformity.¹⁶ Knee deformities are very common in Nigerian children, and some adults are seen with neglected, gross deformities. It is not possible to say categorically from the present study whether the observed valgus deformity was the cause or result of the knee degeneration. However, we were struck by some rather young adults with severe genu valgum who presented with marked osteoarthritic knees. It may be that although minor degrees of genu valgum are not necessarily related to osteoarthritis, severe degrees of the deformity are related, just as the more severe degrees of hallux valgus have been found to predispose to osteoarthritis of the metatarsophalangeal joints.⁶ Both valgus and varus de-

formities are known to be associated with a greater progression of degenerative changes than occurs in knees with neutral angulation.^{7 9 14} However, the progression of degeneration for a given patient cannot be predicted with sufficient certainty to warrant prophylactic reconstruction.¹⁴

Polyarticular osteoarthritis affecting three or more joints¹⁷ was uncommon in this series and occurred in only four patients (4.9%). In contrast the incidence of multiple osteoarthritis in an English population was 24%.⁶ The reason for this low incidence of polyarticular osteoarthritis in African Negroes is not known, but the occurrence has been reported previously.¹⁷

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