Demographic study of osteoarthritis of knee joint in Salahaldin governorate

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Abstract

Objectives: To assess the gender and age distribution related to deformities & risk factors of osteoarthritis among patients in Salah aldin governorate.

Methodology: A 1668 knee joints of 1000 patient comprised in the study. All patients underwent full history, complete rheumatic clinical, radiological & laboratory examination to assess the demographic criteria and knee joints deformities. Age grouping was done in assessing various deformities.

Results: The age distribution in this study show that most of deformities develop after the age of 50 years and the females are predominantly affected 676(67.6%) while males were 324(32%). The rural inhabitant people were 718(71.8%) while those lived in urban 282(28%).; In this study the Genu varus deformity were 877(52.6%) knee joint, fixed flexion deformity were 556(33%) knee joint.

Regarding to the causes & risk factors of OA of the knee joint obesity were 326 (36.5%) of patients, traumatic injuries or fractures 23 (11.6%), genetic factor 114 (28.5%), inflammatory arthritis 9 (7.8%) and others.

Conclusion: Females affected twice more than males with OA of knee and its disabilities. Obesity is serious contributing factor. Genu varus are a significant deformities and then fixed flexion deformities specially in post-traumatic, post inflammatory process & knee instability syndromes or meniscus tear.

Introduction

Knee osteoarthritis or degenerative disease of the knee joint is a group of mechanical abnormalities involving degradation of joints including articular cartilage and subchondral bone .There is substantial opportunity for obesity to have a physiologic role in the development and subsequent progression of knee OA(1).

Symptoms may include joint pain, tenderness, stiffness, locking, and sometimes an effusion. A variety of causes—hereditary, developmental, metabolic, and mechanical—may initiate processes leading to loss of cartilage. When bone surfaces become less well protected by cartilage, bone may be exposed and damaged. As a result of decreased movement secondary to pain, regional muscles may atrophy, and ligaments may become more lax (2).

Treatment generally involves a combination of exercise, lifestyle modification, and analgesics. If pain becomes debilitating, joint replacement surgery may be used to

improve the quality of life. OA is the most common form of arthritis,(2) and the leading cause of chronic disability in the United States (3). It affects about 8 million people in the United Kingdom and nearly 27 million people in the United States.

It is more common in people older than 40 years. Women have greater chance to be affected. Osteoarthritis (OA), based on radiographs, is a highly prevalent joint disease affecting 30–50% of adults age more than 65years (4, 5).

Age, female sex, obesity, and previous injury are consistently reported risk factors for OA (6). Obesity

is the most conspicuous risk factor (7-10) and of great interest because it is potentially modifiable.

Although some studies have related higher concentrations of C-reactive protein to both greater prevalence and incidence of knee OA (11,14,15), not all studies have reported this (16,17).The patterns (12,13,16,18) of association between metabolic factors and OA have led some to declare that the primary contribution of obesity to OA may be joint specific and dependent upon the degree to which obesity contributes to the mechanical loading of articular cartilage at a specific site (19–21)

For example, varus knee alignment is thought to place mechanical loads, including those loads generated by excess body mass, mostly on the medial tibiofemoral compartment (22). The impact of excess body mass at this site could generate both mechanical and metabolic contributions, whereas the impact of excess body mass on hand OA may be more reflective of the metabolic contribution.

The aim of the study to assess the age distribution and the risk factors of osteoarthritis of knee joints and its related deformities in Salah Aldin.

Patients & methods

Cross-sectional study was curried out in department of physiotherapy in Tikrit teaching hospital including 1000 patients present with 1668 knee osteoarthritis, managed in a hospital & other rheumatic private clinics between April 2010 to March 2011 .The patient aged between 30-86 years.

All patients underwent full history taking, thorough clinical & radiological examination of both knees , some patients subjected to specific investigations like CRP, ESR, FBS, Rheumatoid factor & serum uric acid to register the presence of any rheumatic & other systemic diseases.

Demographic features include the residence, sex, age of patients and the mechanical, overweight or hereditary factors were also checked as a risk factors regarding bad lifestyle habits like knee joints overuse, up & down stair excessive going, measurement of weight & height and Obesity was defined by a body mass index (BMI) of 30 and above, but there were other causes or contributing factors.

The patients divided into six groups according to the age in relation to the frequencies of joints deformities (varus, valgus, genu recurvatum & fixed flexion deformities)and also divided into other subgroups to study the of risk factors of the disease .

The conservative treatment protocol started with analgesia, NSAID & regular courses of physiotherapy & supportive measures like foot orthosis & knee braces.

Results

A total of 1000 patients with 1668 knee OA during the follow-up. The females with OA were 676(67.6%) while males were 324(32%). The rural inhabitant people were 718(71.8%) while those lived in urban 282(28%) as shown in table 1.

The knee joint deformities show different percentage according to type & age of patients as shown in table 2 & figure 1.

The advanced stage of OA of the knee joints end with one of the serious deformities; In this study the Genu varus deformity were 877(52.6%) knee joint, fixed flexion deformity were 556(33%) knee joint.While Genu valgus deformity were 176(10.5%)knee joint & Genu recurvatum deformity were 59(3.5%) knee joint (Table 2).

From the history & follow up of the patients the risk factors were obesity 326 (36.5%), traumatic injuries or fractures 23 (11.6%), genetic factor 114 (28.5%), inflammatory arthritis 9 (7.8%), overuse syndromes or over kneeling habits 34 (24%) & Ligamentous instability 9 (9%) are described in Table 3.

Regarding to the age distribution the study show that most of deformities develop after the age of 50 years specially in patients who are obese & those with strong hereditary predisposing factor while post traumatic & post inflammatory OA were irrespective to the age (figure 1).

Discussion

Osteoarthritis (OA) is the most common form of chronic arthritis worldwide and is a key cause of pain and disability in older adults (2, 3).

Due to ageing process in men, and due to cessation of menses in women, bones may become osteoporotic and soft. They then bend and cause a deformity around the knee.

Like other studies, in present study the females have a greater chance to be affected by OA of the knee joints (67.6%) than males (32%) & is a highly prevalent joint disease affecting adults' age more than 60 years (4, 5, 6).

Also the study show that the rural inhabitants were the vast majority (71.8%) among osteoarthritis patients & that is might be due to overuse, continuous heavy mechanical impacts on their knees & they are of low health education.

The obesity in present study comprise (36.5%) in compares to other studies believed that obesity is the most conspicuous risk factor (7-10)   and in spite of misrecognition of the exact cause. A number of studies have shown that obesity represents one of the most important risk factors and it is also a predictor for progression of OA especially of a knee joint and less of the hip joint. So the primary contribution of obesity to OA may be joint specific and dependent upon the degree to which obesity contributes to the mechanical loading of articular cartilage at a specific site (19–21). Also current study has supported the evidence that the presence of genetic factor play an important role as an additional contributing risk factor (28.5%).

Varus knee alignment deformity in OA patients about(52.6%) & is thought to place mechanical loads, including those loads generated by excess body mass, mostly on the medial tibiofemoral compartment (22) were is the flexion deformity(33%) mostly happened secondary to trauma, inflammatory process & knee instability syndromes or meniscus tear.

The present study recommends:
Patient's education, weight reduction as early as possible of life, leaving the bad habits like prolong squatting, up-& down-stair going & over- kneeling work in addition of getting an enough time of rest to overcome & prevent further damage to the cartilage.

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Table1: knee joints osteoarthritis in relation to sex & residence.

Residence	Female	Male	Total
Rural inhabitant	480	238	718 (71.8%)
Urban inhabitant	196	86	282 (28%)
Total	676(67.6%)	324(32%)	1000 (100%)

Table 2: Distribution of knee joint deformities.

Deformities	Frequency No(%)
Genu varus	877 (52.6%)
Genu valgus	176 (10.5%)
Genu recurvatum	59 (3.5%)
Fixed flexion	556 (33%)
TOTAL	1668

Table 3: Risk factors of knee osteoarthritis.

Risk factors	Knee joints O.A NO(%)		
	Yes	NO	Total
Obesity	326 (36.5%)	567	893
Trauma	23 (11.6%)	177	200
Genetic factor	114 (28.5%)	286	400
Inflammatory arthritis	9 (7.8%)	101	110
Overuse syndromes	34 (24%)	106	140
Sport injury	9 (9%)	91	100

Age prevalence

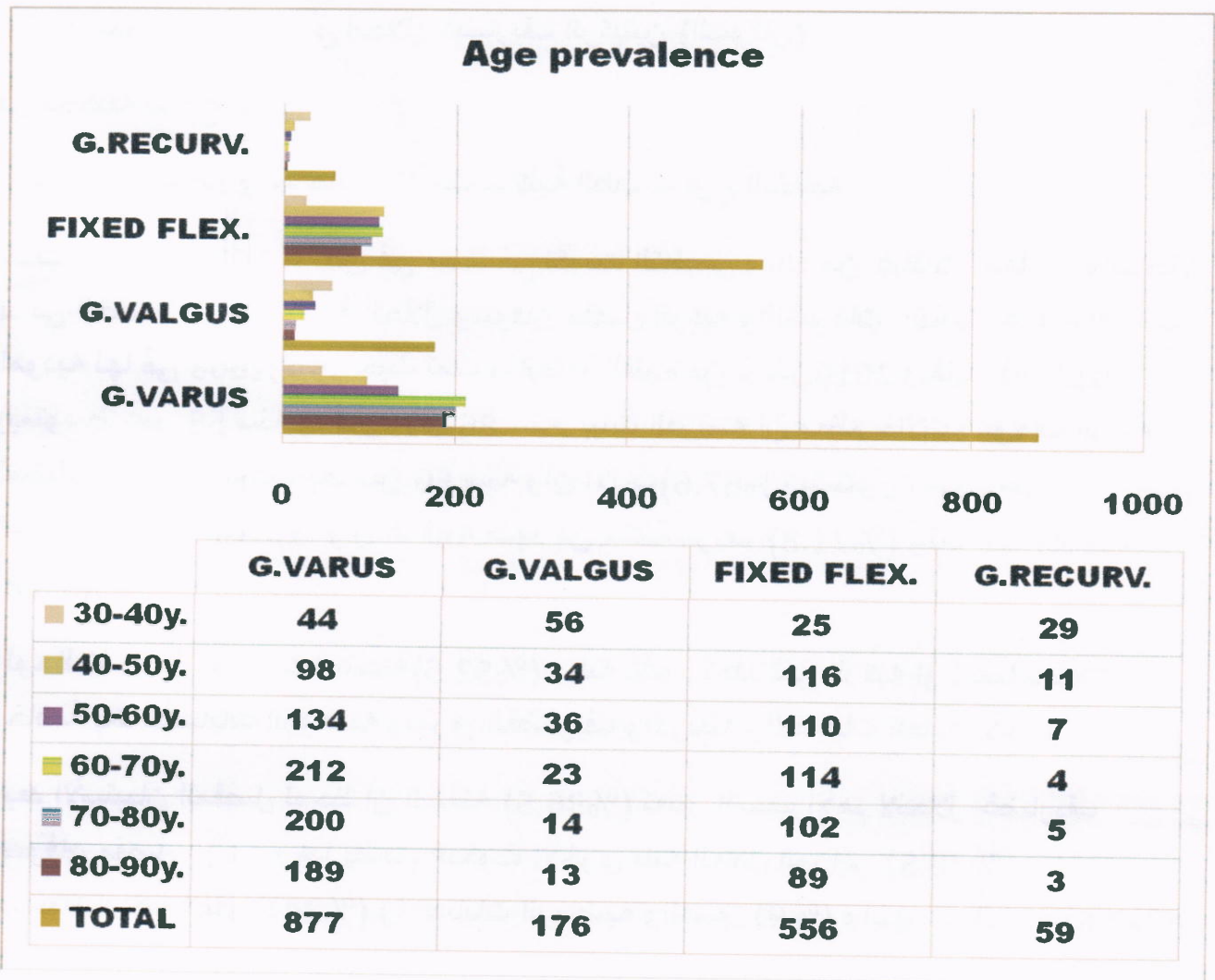|	G.VARUS	G.VALGUS	FIXED FLEX.	G.RECURV.
30-40y.	44	56	25	29
40-50y.	98	34	116	11
50-60y.	134	36	110	7
60-70y.	212	23	114	4
70-80y.	200	14	102	5
80-90y.	189	13	89	3
TOTAL	877	176	556	59

Figure 1: Age distribution among osteoarthritis patients.

* دراسه ديموغرافيه لمرضى أنحلال غضاريف الركبتين (السوفان)

* في محافظة صلاح الدين.

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أخذت عينه من 1000 مريض في مستشفى تكريت التعليمي وعدد من عيادات المفاصل والتأهيل الطبي الخاصه, وتمت دراسة أنحلال وسوفان مفصل الركبه والتشوهات الناتجه عنها والأسباب المؤديه لها في 1668ركبه. حيث تمت متابعتهم للفتره من نيسان2010 ولغاية أذار 2011 وبمتوسط عمر 58 سنه وبمدى 30-86 سنه. بينت الدراسه ان معظم حالات تشوهات الركبه المصابه بالسوفان تحدث بعد سن 50 سنه وأن الأناث(67.6%) يشكلون أغلبيه على الذكور(32%) بنسبة2:1 وأن الغالبيه منهم من سكنة الريف (71.8%) بينما سكنة المدينه (28%).

ولوحظ تشوه تقوس الركبه بنسبة(52.6%) ويليه تشوه تحدد ثني الركبه او أنبساطها(33%) وخاصة بعد الأصابات الرياضيه وتمزق الغضاريف والأربطه والأصابات العامه الأخرى.

وبعد الأستبيان المفصل لوحظ أن السمنه (36.5%) تعتبر السبب الأهم لأنحلال غضاريف وسوفان مفصل الركبه وهذا يطابق البحوث الأخرى يليه العامل الوراثي (28.5%) وعادات أستخدام الركبه المفرط(24%) والأصابات الرياضيه والكسور(9%) وألتهابات الركبه (7.8%) وغيرها.

أظهرت النتائج أن المرأة الريفية البدينة معرضه للإصابة بسوفان الركبتين وتقوسها أكثر من الرجل بسبب التعرض المبكر والمستمر للجهد الذي يفوق طاقة تحمل الركبة بالإضافة الى ضعف الوعي الصحي والعادات السيئة المتبعة في تللك المناطق.