

Co-relation between Non-specific Knee Joint Pain and Osteoarthritis

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Abstract

Introduction: Osteoarthritis (OA) is a degenerative joint disease. Pain is the worst and most frequent problem in OA patients that leads to disability. The rate of knee joint pain has been found to be correlated with OA in many studies. The association of knee pain with OA differs by gender, with advancing age and nature of occupations. Knee radiograph is preferred by most of the physicians for the initial assessment of the knee joint pain. This study was carried out to see the relation between knee joint pain and OA along with age, sex and occupation.

Methods: In this prospective cross-sectional study, knee radiographs of 200 patients performed in the Radiology Department of T.U. Teaching Hospital for nonspecific knee joint pain were reviewed. Pain was considered as non specific pain when there was no history of trauma or any known disease affecting the joint and no significant abnormality related to any disease entity was found during clinical examination. The study was conducted over a period of three months between July to September 2015. The proforma was filled and then collected data were analyzed using SPSS software to show the relation between knee joint pain and OA.

Results: Among total of 200 knee x-rays, 63% (126) were female and 37% (74) were male. The highest number of population was in the age group of 50-59 year, which comprised 26% of total population and lowest population was in >80 year group comprising 0.5% of total population. Housewives were highest in number comprising 39.5% (79) followed by farmer 19% (38), physical worker 15.5% (31), people in service 12.5% (25), business 7.5% (15) and student 6% (12). Of the total population, 59% (118) had radiographic features of OA changes. Most affected people were older than 50 years and all patients older than 70 years had OA changes. No OA was seen in people younger than 20 years. Highest percentage of OA was found in housewives accounting 51.7% followed by farmers (18.6%) and business people (4.2%). No OA was found in students involved in the study.

Conclusion: The study demonstrated that the occurrence of OA is more common finding in population with non-specific knee joint pain. OA is more common in females and population of age ≥ 50 years. OA is most common in housewives and least in students.

Keywords: knee, pain, osteoarthritis, x-ray

Introduction

Osteoarthritis (OA) is a non-inflammatory, localized degeneration of the hyaline cartilage in synovial joints, also known as degenerative joint disease.¹ OA is the most common form of arthritis, and the leading cause of chronic disability in the United States. It affects nearly 27 million people of age 25 and older in the United States.² The prevalence of knee OA in Japanese men and women aged more than 40 years, is approximately 42.6% and 62.4%, respectively.³ OA can affect multiple joints in body, but it is commonly

found in knee.² Patients with knee osteoarthritis suffer from progressive disability when walking, going up and down stairs. OA is one of the most common causes of joint pain and physical, mental and social disability. Its symptoms may include joint pain, tenderness, stiffness, locking, and sometimes an effusion. It may be affecting various aspects of patients' quality of life.

The knee joint joins the thigh with the leg and consists of two articulations, one between the femur and tibia, and another between the femur and patella⁴. It is the largest joint in the human body. The knee is a mobile

hinge type of synovial joint, which permits extension and flexion as well as a slight internal and external rotation. Joint consists of femoro-patellar articulation, consisting of patella (largest sesamoid bone) or "kneecap", and patellar groove and femoro-tibial articulation linking the femur with tibia.⁵ It plays an essential role in movement related to carrying the body weight in horizontal (running and walking) and vertical (jumps) directions. Although the design of knee joint has not changed fundamentally over millennia, it is vulnerable to both acute injury and the development of osteoarthritis.

Overweight and pain are factors that could cause problems. Knee osteoarthritis is only one of many adverse consequences of obesity. According to the Arthritis Research Center (2002), pain is the worst and most frequent problem in OA patients that leads to disability. Pain and joint stiffness are important factors that affect the ability to perform activities of daily living in patients with knee Osteoarthritis.(Ali Reza MohajjelAghdam et al., 2013)⁶.

Gender differences have also been observed in knee OA. The prevalence of knee OA is higher in women than men. So quality of life also differ between genders.^{3, 7}

Prevalence of OA increases with age and aging is associated with decreasing physiological functions, thus leading to major health problems.² It is the second most common diagnosis made in older people. Below the age of 55, there are more common causes of knee pain than OA- notably, injuries to cartilage, ligaments and soft tissue structures around the joint. Such injuries may predispose to later OA and prevalent to primary prevention of knee OA. Above the age of 55, radiographic knee OA is an increasingly common cause of knee pain.⁸

Despite the development of newer imaging techniques, the radiograph remains the most accessible tool in the evaluation of the OA joint⁹. Early identification of OA is crucial to improving clinical decision making and advancing the understanding of disease progression and treatment option.

In this study we evaluated the radiographic occurrence of OA in patients with non specific knee pain and correlated with different age, gender and occupations.

Methodology

This was a qualitative cross sectional study carried out in the department of Radiology and Imaging, Tribhuvan University Teaching Hospital from July to September 2015. Knee radiographs of 200 patients referred to the department of radiology complaining the knee joint pain were reviewed and filled in the proforma made with the finding, using the observational method.

All adult patients of age >16 years referred to radiology department with non specific knee pain were included in the study. Patients with history of trauma, infection, rheumatological problem, coagulation abnormality involving joints, previous operation or prosthesis were excluded from the study. Similarly portable x-rays,

emergency x-rays and x-rays with other specific disease were excluded from the study.

Standard radiographic positioning was maintained in all the radiographs. All the radiographs were taken in the supine position with centering at the level of half inch (1.3cm) inferior to the patellar apex for antero-posterior view and 1 inch (2.5cm) distal to the medial epicondyle for lateral view. To minimize radiation dose, knee radiographs for knee joint pain were routinely limited to antero-posterior (AP) and lateral (LAT) views. Hence, skyline view and oblique views were not routinely done except if indicated. Skyline view was taken for evaluation of patellar abnormality. Occupation of patients was recorded in the proforma.

Diagnosis of OA was made when radiographs displayed marginal osteophytes, subchondral sclerosis with or without joint space narrowing.

Findings were analyzed using SPSS version 20. Occurrence of OA in different age group, sex and occupations were calculated.

Result

A total of 200 AP and LAT radiographs of knee joints of patients with non specific knee pain were reviewed. Among total 200 patients, 74 (37%) were male and 126 (63%) were female with female: male ratio of 1.7:1.

Radiographs of adult patients of age 17 to 82 years were evaluated. For the convenience, the age of patients were grouped in interval of 10 years [Fig 1]. Highest number of patients was in age group of 50-59, which comprised 26% of total population. Similarly the lowest population was in >80 year group, comprising 0.5% of total population.

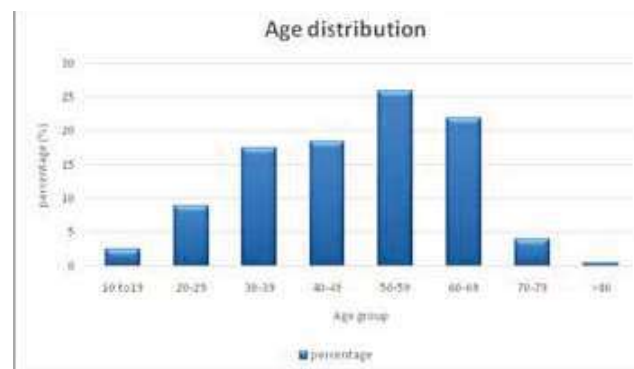


Figure 1: Age distribution of patients according to percentage coverage

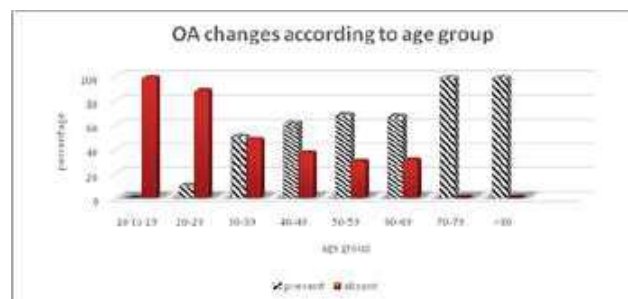
Patients with different occupations were included in the study [Table 1]. Out of 200 patients, highest number were housewives comprising 79 (39.5%) of the population and lowest number were students comprising 12 (6%) patients of total population.

Table 1: Distribution according to occupations

Occupations	No. of patients	Percentage %
Housewife	79	39.5
Farmer	38	19.0
Businessman	15	7.5
Service	25	12.5
Physical worker	31	15.5
Student	12	6.0
Total	200	100%

Among total 200 patients, 118 patients (59%) had OA changes while 82 (41%) patients had no OA changes.

OA was more common in females (70% of total female population) than in males (40% of total male population). OA changes in different age groups were evaluated [Fig 2]. The highest number of OA was in age groups of more than 50 years. It was 69.2% in 50-59 age group and 100% in >70 age groups. No OA changes were found in age group 10-19.

**Figure 2: OA changes according to age group**

Among different occupations, highest percentage of OA was found in housewives comprising 51.7%. It was followed by people working in farms with the percentage of 18.6 and in business 4.2%. None of the student involved in the study had OA changes [Table 2].

Table 2: Distribution of OA according to occupation of patients

Occupation	Frequency	Percentage
Housewives	61	51.7
Farmer	22	18.6
Business	5	4.2
Service	10	8.4
Physical worker	20	16.4
Student	0	0
Total	118	100

Discussion

Osteoarthritis of the knee is a significant public health problem in the general population, because it is associated with a substantial disability and healthcare costs. Radiography plays a key role in the initial evaluation of acute knee pain and also plays an important role in the management of patients suffering from non-specific knee joint pain. Knee radiography is the most common radiographic procedure preferred by the physicians for initial assessment of knee joint pain and is one of the most frequently performed procedures in the medical imaging department. This study was conducted to evaluate the occurrence of OA in knee joint with patients having non-specific knee joint pain.

This study demonstrated that OA is a common finding in patients with non specific knee pain. Among total population with non-specific knee joint pain, 58% had radiographic features of OA changes. In a study, John Bedson and Peter R Croft¹⁰ showed that radiographic osteoarthritis ranged from 15-76% and in those with radiographic knee OA the proportion with pain ranged from 15-81%. Occurrence of OA in our study was slightly higher than that found by Lan T. Ho-Pham et al¹¹ who found the point prevalence of OA as 34.2%. This could be due to small sample size and uneven distribution of people of different age groups in our study or due to geographic difference in population studied.

Our study demonstrated that OA change was more common in females (70% of females) than males (40% of males). The study done by Jennie Mckee¹¹ also showed that incidence of OA is greater in woman than in male. According to his study, the incidence of OA was 1.7 times greater in women than man. In another similar study done by Lan T. Ho-Pham et al¹² also showed higher prevalence of OA among women than men (35.3% vs. 31.2%). In the same study they also showed that the prevalence of knee OA increased with advancing age: 8% among those aged 40-49 years, 30% in those aged 50-59 years, and 61.1% in those aged ≥60 years.

In this study OA finding mostly occurred in those patients more than 50 years: 69.2%; among those aged 50-59, 68.2% in those aged 60-69, 100% in both aged 70-79 and 80 years. No OA changes among those aged 10-19 (0%). Similar results were found in other studies^{8, 12}. In a study done by G Peat et al, the prevalence of painful disabling knee osteoarthritis in people over 55 years was 10%, of whom one quarter were severely disabled⁸.

In this study occurrence of OA changes with respect of occupation of the population was also evaluated. Most number of population involved were housewives and least were students. Occupation involving more physical exercise is more likely to have greater prevalence of OA changes. According to present study 77.2% of total housewives had OA finding. None of the student in our study had OA changes. This could be due the fact that most of the students involved in this study were in the

younger age group and the study included small number of students.

Our study had many limitations. First the study included small sample size. There was no uniform distribution of patients in different occupations and age groups. We did not study the relationship between OA changes and Body Mass Index (BMI) which is important known factor for OA changes.

Conclusion

This study demonstrated that the occurrence of OA is the common finding in those populations with non-specific knee joint pain. OA changes were mostly occurred in old age. Females who were exposed to greater physical exercise like housewives were mostly affected from OA changes than males.

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