International Journal of Medical Research Professionals
P-ISSN: 2454-6356; E-ISSN: 2454-6364
DOI: 10.21276/ijmrp

IJMRP

Original Research Article.

Evaluation of Radiographic Findings in Patients with Osteoarthritis of Knee At a Tertiary Care Hospital

Vikash Kumar Gupta

Assistant Professor, Department of Radiodiagnosis,
Venkateshwara Institute of Medical Sciences, Gajraula, Amroha, Uttar Pradesh, India.

ABSTRACT

Background: Osteoarthritis (OA) is one of the most prevalent conditions resulting to disability particularly in elderly population. To diagnose OA, the clinician might assess the nature and severity of the pain. An X-ray of the knee-narrowing of the joint space is a good indicator of OA. Hence; the present study was undertaken for assessing Radiographic Findings in Patients with Osteoarthritis of Knee.

Materials & Methods: A total of 50 patients with presenting with knee pain and clinical suspicion of osteoarthritis were enrolled. Anteroposterior radiographs of the knee were obtained in a weight-bearing extended position by using a standard radiographic technique. All radiographs were assigned scores by using the Kellgren-Lawrence scoring system. All the results were recorded and analysed using SPSS software.

Results: Mean age of the patients was 55.12 years. 54 percent of the patients were males while the remaining were females. Normal findings on radiography were seen in 16 percent of the patients. 52 percent of the patients were doubtful according to Kellgren-Lawrence score on radiographic examination. Minimal, moderate and severe arthritis were seen in 24 percent, 6 percent and 2 percent of the patients respectively.

Conclusion: Radiographic examination is a highly specific method of early identification of clinical suspected cases of osteoarthritis of knee.

Key words: Osteoarthritis, Knee, Radiographic.

***Correspondence to:**

Dr. Vikash Kumar Gupta,
Assistant Professor,
Department of Radiodiagnosis,
Venkateshwara Institute of Medical Sciences,
Gajraula, Amroha, Uttar Pradesh, India.

Article History:

Received: 06-06-2018, **Revised:** 01-07-2018, **Accepted:** 19-07-2018

Access this article online	
Website: www.ijmrp.com	Quick Response code
DOI: 10.21276/ijmrp.2018.4.4.082	

INTRODUCTION

Osteoarthritis (OA) is one of the most prevalent conditions resulting to disability particularly in elderly population. OA is the most common articular disease of the developed world and a leading cause of chronic disability, mostly as a consequence of the knee OA and/or hip OA. The economic costs of OA are high, including those related to treatment, for those individuals and their families who must adapt their lives and homes to the disease, and those due to lost work productivity. About 13% of women and 10% of men aged 60 years and older have symptomatic knee OA. The proportions of people affected with symptomatic knee OA is likely to increase due to the aging of the population and the rate of obesity or overweight in the general population.[1-3]

To diagnose OA, the clinician might assess the nature and severity of the pain. It can also be diagnosed to measure the amount of movement in the joint. An X-ray of the knee-narrowing of the joint space is a good indicator of OA. Bony spurs can also be seen on an X-ray. In some cases, for further clarity and better diagnosis, the magnetic resonance imaging (MRI) scan may be necessary. This allows the clinician to see whether any damage to the soft tissue has taken place within the joint. In certain cases, a blood sample may be necessary to rule out the presence of other types of types of arthritis.[4-7] Hence; the present study was undertaken for assessing Radiographic Findings in Patients with Osteoarthritis of Knee.

MATERIALS & METHODS

The present study was undertaken for assessing Radiographic Findings in Patients with Osteoarthritis of Knee in the Department of Radiodiagnosis, Venkateshwara Institute of Medical Sciences, Gajraula, Amroha, Uttar Pradesh, India. A total of 50 patients with presenting with knee pain and clinical suspicion of osteoarthritis were enrolled. Detailed clinical history of all the patients was done. Informed consent was obtained from all the subjects/guardians before the study. The detailed clinical history regarding the onset of symptoms was also obtained. The spectrum of findings was recorded as per the performa.

Inclusion Criteria

- Patients with knee pain and clinical suspicion of osteoarthritis
- Cases of all age groups irrespective of sex

Exclusion Criteria

- Patients with past history of trauma or knee surgery were excluded from the study.
- Patients who couldn't undergo Radiographic examination.

Anteroposterior radiographs of the knee were obtained in a weight-bearing extended position by using a standard radiographic technique. All radiographs were assigned scores by using the Kellgren-Lawrence scoring system. This summary Kellgren-Lawrence score was based on osteophyte formation, joint space narrowing, sclerosis, and joint deformity characteristics according to the five-level scale defined as follows: grade 0, normal; grade 1, doubtful osteoarthritis; grade 2, minimal osteoarthritis; grade 3, moderate osteoarthritis; or grade 4, severe osteoarthritis.[8] All the results were recorded and analysed using SPSS software. Chi-square test was sued for evaluation of level of significance.

Table 1: Age-wise distribution

Age group (years)	Number of patients	Percentage of patients
Less than 40	6	12
40 to 50	5	10
51 to 60	12	24
61 to 70	15	30
More than 70	12	24
Total	50	100
Mean (years)	55.12	

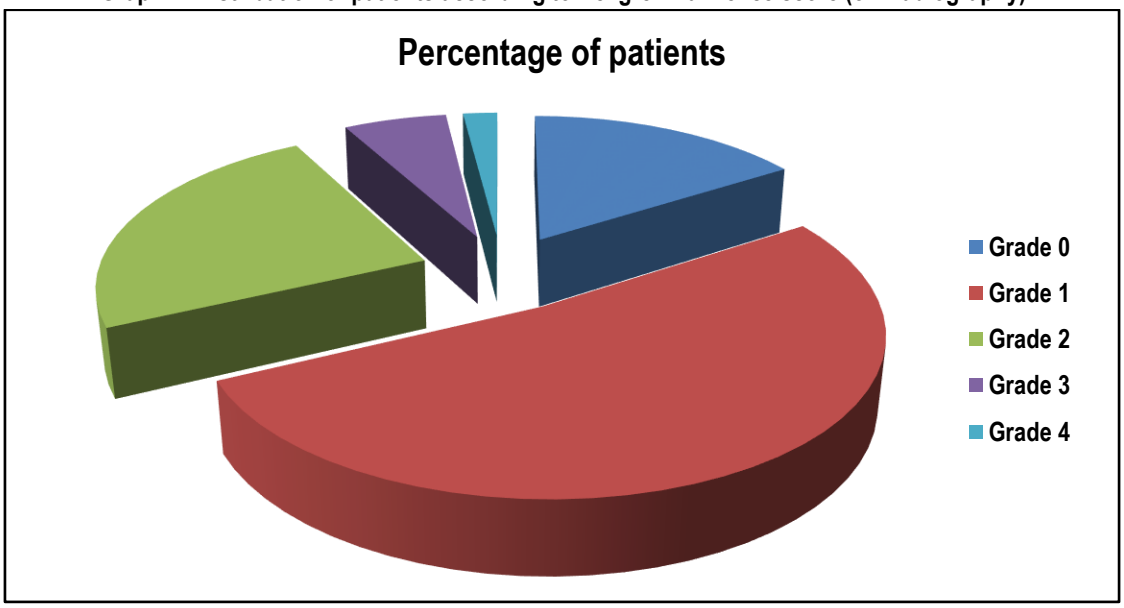
Table 2: Gender-wise distribution of patients

Gender	Number of patients	Percentage of patients
Male	23	46
Females	27	54
Total	50	100

Table 3: Distribution of patients according to Kellgren-Lawrence score (on Radiography)

Kellgren-Lawrence score (on Radiography)	Parameter	Number of patients	Percentage of patients
Grade 0	**Normal**	8	16
Grade 1	**Doubtful Osteoarthritis**	26	52
Grade 2	**Minimal Osteoarthritis**	12	24
Grade 3	**Moderate Osteoarthritis**	3	6
Grade 4	**Severe Osteoarthritis**	1	2
Total		50	100

Graph 1: Distribution of patients according to Kellgren-Lawrence score (on Radiography)



RESULTS

30 percent of the patients belonged to the age group of 61 to 70 years while 24 percent of the patients each belonged to the age group of 51 to 60 years and more than 70 years. Mean age of the patients was 55.12 years. 54 percent of the patients were males while the remaining were females. Normal findings on radiography were seen in 16 percent of the patients. 52 percent of the patients were doubtful according to Kellgren-Lawrence score on radiographic examination. Minimal, moderate and severe arthritis were seen in 24 percent, 6 percent and 2 percent of the patients respectively.

DISCUSSION

Early recognition of patients with knee OA and correction of risk factors is important. Diagnosis can be made based on history and clinical features. However, in several patients especially in patients with suspected clinical features, confirmation of OA or determining the extent of joint involvement may require performance of radiography. Information with regard to some clinical features and risk factors such as age, sex, body mass index, absence of whole leg pain, traumatic onset, difficulties in descending the stairs, palpable effusion, fixed-flexion deformity, restricted-flexion range of motion, and crepitus are helpful and predict the development of radiographic findings in favor of knee OA with a sensitivity and a specificity of 94% and 93%, respectively.[8- 10] Hence; the present study was undertaken for assessing Radiographic Findings in Patients with Osteoarthritis of Knee.

In the present study, 30 percent of the patients belonged to the age group of 61 to 70 years while 24 percent of the patients each belonged to the age group of 51 to 60 years and more than 70 years. Mean age of the patients was 55.12 years. 54 percent of the patients were males while the remaining were females. The increase in the prevalence and incidence of OA with age probably is a consequence of cumulative exposure to various risk factors and biologic changes that occur with aging that may make a joint less able to cope with adversity, such as cartilage thinning, weak muscle strength, poor proprioception, and oxidative damage.[4]

In the present study, normal findings on radiography were seen in 16 percent of the patients. 52 percent of the patients were doubtful according to Kellgren-Lawrence score on radiographic examination. Minimal, moderate, and severe arthritis were seen in 24 percent, 6 percent and 2 percent of the patients respectively. Our results were in concordance with the results obtained by Hayes CW et al, who also reported similar findings in their respective study. They reported that among the 232 knee joint analysed, 49.6%, 14.2%, 28.4%, 7.3 and 0.4% knees had Grade 0 (normal), Grade 1 (Doubtful OA of the knee), Grade 2 (Minimal OA of the knee), Grade 3 (Moderate OA of the knee), and grade 4 (Severe OA of the knee) respectively.[11] In another study conducted by Cubukcu D et al, authors reported that on the radiographic assessment with Kellgren-Lawrence score, 12 patients (10.5%) were of grade 1, 39 (34.2%) were of grade 2, 57 (50.0%) were of grade 3, and 6 (5.3%) had grade 4, showing that the subjects were mostly categorized as mild to moderate disease on radiographic assessment.[12]

Currently, the Kellgren-Lawrence (KL) grading scheme is the most-widely used and accepted standard for diagnosis of radiographic OA.[8] While radiography is useful for evaluation of JSW, a 2005 study by Amin et al showed that radiographic progression was 91% specific but only 23% sensitive for cartilage loss.[13] The diagnosis of osteoarthritis is often suggested on physical examination. Plain film radiographs are usually adequate for initial radiographic evaluation to confirm the diagnosis or assess the severity of disease if surgical intervention is being considered. Two views of the involved joint should be obtained, with the possible exception of the sacroiliac joints and the pelvis. The two views should be obtained in orthogonal planes to one another (i.e., anteroposterior [AP] and lateral). Additional views of weight-bearing joints (knees, hips) may be necessary. Correlation of radiographic evidence of degenerative joint changes and symptoms described by patients vary by joint. Abnormalities detected in the knees correlate with pain in 85 percent of patients, the fingers and carpometacarpal joints in approximately 80 percent and the hips in 75 percent.[14] In another study conducted by Javaid MK et al, authors compared radiographic with MRI features of knee OA and assess the discrimination between painful and non-painful knees in persons with unilateral symptoms. 283 individuals with unilateral knee pain aged 71 to 80 years from Health ABC, a study of weight-related diseases and mobility, had bilateral knee radiographs, read for KL grade and individual radiographic features, and 1.5T MRIs, read using WORMS. Knee pain was significantly associated with both radiographic (any JSN grade >=1: OR 3.20 (1.79 – 5.71) and MRI (any cartilage defect:>=2: OR 3.67 (1.49 – 9.04)) features. However, most subjects had MR detected osteophytes, cartilage and bone marrow lesions in both knees and no individual structural feature discriminated well between painful and non-painful knees. The best performing MRI feature (synovitis/effusion) was not significantly more informative than KL grade >=2 (p=0.42). In persons with unilateral knee pain, MR and radiographic features were associated with knee pain confirming an important role in the etiology of pain.[15]

CONCLUSION

From the above results, it can be concluded that Radiographic examination is a highly specific method of early identification of clinical suspected cases of osteoarthritis of knee.

REFERENCES

1. Hayami T. Osteoarthritis of the knee joint as a cause of musculoskeletal ambulation disability symptom complex (MADS) Clin Calcium. 2008;18:1574–80.

2. Peat G, McCarney R, Croft P. Knee pain and osteoarthritis in older adults: a review of community burden and current use of primary health care. Ann Rheum Dis. 2001;60:91–7.

3. Bliddal H, Christensen R. The treatment and prevention of knee osteoarthritis: a tool for clinical decision-making. Expert Opin Pharmacother. 2009;10:1793–804.

4. Zhang Y, Jordan JM. Epidemiology of osteoarthritis. Clin Geriatr Med. 2010;26:355–69.

5. Peat G, Thomas E, Duncan R, Wood L. Is a false-positive clinical diagnosis of knee osteoarthritis just the early diagnosis of preradiographic disease? Arthritis Care Res (Hoboken) 2010;62:1502–6.

6. Zhang W, Doherty M, Peat G, et al. EULAR evidence based recommendations for the diagnosis of knee osteoarthritis. Ann Rheum Dis. 2010;69:483–9.

7. Bhagat S, Ostör AJ. Diagnosing joint pain in the older people. Practitioner. 2010;254:17–21.
8. Kellgren JH, Lawrence JS. Radiological assessment of osteoarthrosis. Ann Rheum Dis 1957; 16:494-501.
9. Esser S, Bailey A. Effects of exercise and physical activity on knee OA. Curr Pain Headache Rep. 2011;15:423–30.
10. Salve H, Gupta V, Palanivel C, Yadav K, Singh B. Prevalence of knee osteoarthritis amongst perimenopausal women in an urban resettlement colony in south Delhi. Indian J Public Health. 2010;54:155–7.
11. Hayes CW, Jamadar DA, Welch GW, Jannausch ML, Lachance LL, Capul DC, Sowers MR. Osteoarthritis of the knee: comparison of MR imaging findings with radiographic severity measurements and pain in middle-aged women. Radiology. 2005 Dec;237(3):998-1007.
12. Cubukcu D, Sarsan A, Alkan H. Relationships between Pain, Function and Radiographic Findings in Osteoarthritis of the Knee: A Cross-Sectional Study. Arthritis. 2012, Article ID 984060, 5 pages.
13. Amin S, LaValley MP, Guermazi A, Grigoryan M, Hunter DJ, Clancy M, Niu J, Gale DR, Felson DT. The relationship between cartilage loss on magnetic resonance imaging and radiographic progression in men and women with knee osteoarthritis. Arthritis Rheum. 2005;52:3152–9.
14. Bagge E, Bjelle A, Eden S, Svanberg A. A longitudinal study of the occurrence of joint complaints in elderly people. Age Ageing. 1992;21:160–7.
15. Javaid MK, Kiran A, Guermazi A, et al. Individual magnetic resonance imaging and radiographic features of knee osteoarthritis in subjects with unilateral knee pain: the health, aging, and body composition study. Arthritis Rheum. 2012;64(10):3246-55.

Source of Support: Nil. **Conflict of Interest:** None Declared.

Cite this article as: Vikash Kumar Gupta. Evaluation of Radiographic Findings in Patients with Osteoarthritis of Knee At a Tertiary Care Hospital. Int J Med Res Prof. 2018 July; 4(4): 342-45. DOI:10.21276/ijmrp.2018.4.4.082