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A prospective study of relationship between medial joint pain and mild knee osteoarthritis

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ABSTRACT

Background: The relationship between joint pain and osteoarthritis is poorly understood, however, the most common patterns associated with knee osteoarthritis are diffuse or medial joint pain. The objective of the study was to test the sensitivity of medial knee joint pain for the diagnosis of mild knee osteoarthritis, and thence its relationship.
Methods: This is a prospective analytical study of 124 patients visiting to our out-patient setup in the year 2017, with complaint of medial knee joint pain, which after thorough clinical examination, were investigated radiologically.
Results: In our study of 124 patients, there were 69 female (55.5%) and 55 male (47.5%), with a mean age of 59.3 years. The average duration of symptoms was 3.2 years, and the average VAS for severity of pain was 59.3. The sensitivity of medial knee joint pain for mild OA was thus calculated to be 79.8%.
Conclusions: Medial knee joint pain is a very important symptom to raise a suspicion and also to warrant further radiological investigation for the early diagnosis and management of knee OA.

Keywords: Knee osteoarthritis, Medial knee pain, Pain location

INTRODUCTION

Clinically, knee osteoarthritis (OA) is defined by the presence of both radiographic evidence of degenerative joint changes and joint pain.[1] Knee pain is the major disabling, often the first and most important, symptom of knee osteoarthritis.[2-4] Despite the importance of pain as a symptom, there is lack of literature regarding the relationship between location, presence or severity of pain and radiographic change in patients with knee OA.[5] The etiology of OA is complex and its clinical presentation versatile.[3,4,6] For clinicians, location of pain is a standard component of assessment for diagnosis of a clinical condition and to guide decision-making regarding the most appropriate treatment course. More-so-over, location of pain is an important criterion for recruitment of subjects for any given study.[7-10]

Previous literature on location of pain in knee OA is largely limited to heterogeneous samples (including chronic knee pain patients with or without radiographic OA) rendering resulting patterns difficult to interpret and apply to clinical practice and/or research. Assuming that medial tibiofemoral OA is a common pattern of knee OA, a systematic research evaluating the sensitivity and specificity of medial joint pain in early or mild knee OA is warranted.[11] It was with this aim, we decided to conduct a prospective study to determine the relationship between the two.

METHODS

This is a prospective analytical study done in the Department of Orthopaedics, Netaji Subhash Chandra Bose Medical College and Hospital, Jabalpur from 1st January 2017 to 31st December 2017.

Subjects/participants

Participants were consecutive patients visiting to our out-patient setup during the last one year with the complaint of medial knee joint pain. Medial knee joint pain was defined as pain anywhere in the superior medial region (medial to the quadriceps tendon), medial joint line region and medial half of the patellar region. Detailed written informed consent was obtained from all the participants. Detailed history was obtained, followed by thorough clinical examination, and was recorded in a standard Proforma. The severity of pain was assessed by a simple 100 mm visual analog scale (VAS) ('how severe is your knee pain?')

Inclusion criteria

Inclusion criteria were age ≥50 years; medial knee joint pain of duration more than a week; average pain score of ≥4 on visual analog scale (VAS).

Exclusion criteria

Exclusion criteria were diffuse knee pain; history of any type of intraarticular injection or knee surgery to either knee; history of any surgery around the knee; any other arthritic condition or synovitis or infection.

Only the most symptomatic knee was assessed in case of bilateral affection. In case of equal degree of pain, the right knee was evaluated for right handed person and vice versa.

Radiological investigation

Standard weight-bearing anteroposterior radiographs of the knees in full extension was obtained, and each film was graded using the Kellgren/Lawrence (K/L) grading scale as modified by Felson et al. Briefly, radiographic OA grades were assigned based on the following criteria: grade 0: no evidence of osteophytes or joint space narrowing (JSN); grade 1: questionable, but no definite osteophytes or JSN; grade 2: definite osteophytes, with or without possible JSN, or definite mild JSN with or without osteophytes; grade 3: definite moderate JSN (at least 50%), cysts and sclerosis may be present, and osteophytes are usually present; grade 4: severe JSN, definite osteophytes, deformity, cysts, or sclerosis.

Patients with grade 1 and 2 K/L OA scale was considered as having mild knee OA.

Descriptive characteristics

Demographics were collected by questionnaire and included age, gender, height, weight, duration of symptoms, past treatment history. This included specific questions about precipitating (walking, sitting, standing, stair climbing, sleeping) and relieving (rest, walk, hot/cold fermentation, rub/massage) factors.

Statistical analysis

Statistical analysis was performed by using chi-square test. Sensitivity was calculated by the formulae: sensitivity= [True Positives/(True Positives+False Negatives)].

RESULTS

In the present study, 124 patients gave their consent to participate voluntarily for the study, and co-operated in recording of the standard proforma. The participants included 55 men (47.5%) and 69 women (55.5%) with a mean age of 59.3 years. The average duration of symptoms was 3.2 years. The average VAS for severity of pain was 59.3.

Table 1: Exact location of the medial knee joint pain.

S. No.	Exact location	Number	Percentage (%)
1.	Superior medial region	30	24.2
2.	Medial joint line region	76	61.3
3.	Medial half of patellar region	18	14.5
	Total	124	100

Table 2: Distribution according to the K/L radiographic OA grading system.

S. No.	K/L radiographic OA grading system	Number	Percentage (%)
1.	Grade 0	Nil	0
2.	Grade 1	28	22.6
3.	Grade 2	71	57.2
4.	Grade 3	25	20.2
5.	Grade 4	Nil	0
	Total	124	100

Table 3: Distribution of K/L radiographic OA grade, with respect to the exact location of pain.

K/L OA grade	Superior medial region	Medial joint line region	Medial half of patellar region	Medial knee joint
Grade 1	4	6	18	28
Grade 2	10	61	0	71
Grade 3	16	9	0	25
Total	30	76	18	124

The exact location of the medial knee joint pain (Table 1) was mostly in medial joint line region (76-61.3%), in superior medial region (30-24.2%) and in medial half of patellar region (18-14.5%). The distribution according to the K/L radiographic OA grading system (Table 2) was mostly in Grade 2 (71-57.2%), followed by Grade 1 (28-22.6%) and Grade 3 (25-20.2%).

The sensitivity of medial knee joint pain for mild OA was calculated to be 79.8%. The sensitivity of medial knee joint line pain for mild OA was calculated to be 80% (Table 3).

DISCUSSION

The goal of our study was to define the relationship between medial knee joint pain and mild knee OA. Despite all the 124 participants having medial knee joint pain, we found only 28 (22.6%) participants having grade 1 OA on K/L radiographic OA grading system, 71 (57.2%) having grade 2 and the rest 25 (20.2%) participants having grade 3 OA. Considering grade 1 and grade 2 as mild knee OA, the sensitivity of detecting mild knee OA by medial knee joint pain is 79.8%, in our study.

Patients with knee OA are clearly able to define their pain location, the most common pattern being 'diffuse' or 'medial'. Though referred to as 'medial', in 76 (61.3%) participants the exact location was, in fact, mainly localized to the medial joint line region. Out of these 76 participants, 61 had grade 2 K/L knee OA, thus giving a sensitivity of 80% of detecting mild knee OA by isolated medial joint line tenderness.

This is almost similar to the study done by Van Ginckel et al, who has reported a sensitivity of 75% of pain in the medial joint line zone for detecting people with radiographic medial tibiofemoral OA.[12] Their data also showed that not all people with medial radiographic tibiofemoral OA experience pain in the medial knee regions. This fact was also supported by study done by Wood et al, that showed knee pain location is not well correlated with radiographic OA.[13] This fact has serious clinical implications for all researchers, who should not necessarily rely on subjective reports of medially-located knee pain to recruit subjects with medial tibiofemoral OA.

Dixon et al, in an analysis of causes of pain in 120 osteoarthritic knees, also reported a high proportion of pain and tenderness near the insertion of the medial collateral ligament: this pattern was particularly common in obese females with large medial fat pads.[14]

Another interesting observation in our study was that all the 18 participants having pain in the medial half of the patellar region had grade 1 K/L radiographic knee OA. This finding can be explained by the fact that anterior knee pain is commonly seen in patellofemoral OA.

The highly localized nature of pain in the medial knee joint line suggests a local cause. A number of conditions may cause medial knee joint line pain including pathology of either the articular joint cartilage or the medial meniscus. It is often difficult to distinguish these on examination. We were unable to define clearly the relationship between the site of pain and the site of radiological change, specifically osteophytes were not always associated with local pain. However, it is still possible that the source of pain relates to local bone changes: radiological examination is a relatively crude way of assessing osteoarthritic changes and osteophytes may be intermittently painful, perhaps during the growth phases when richly innervated periosteum is being stretched. Osteophytes have been linked to knee pain reporting in several community studies though none of these have been able to address the relationship between site of osteophyte and location of pain within the knee.[15-17]

Our study has certain limitations. We had a relatively small sample size. Given the fact that pain in knee OA is either mostly 'diffuse' or 'medial', we have studied only the medial knee joint pain. Also, we confined our examination to the most painful eligible knee, despite the high prevalence of OA in both the knees. Hence, we could not assess pain pattern and locations in the contralateral knee, which may alter our findings. Finally, due to the cross-sectional design of our study, we do not have information on the reliability or stability of location of pain over a period of time.

CONCLUSION

Medial knee joint pain, more specifically medial joint line pain, is a very important symptom to raise a suspicion and also to warrant further radiological investigation for the early diagnosis and management of knee OA. Although, further studies are required to define the relationship of location of pain to the different grades

of knee OA. This, and other hypotheses generated by this analysis, is amenable to further investigations.

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REFERENCES

1. Altman R, Asch E, Bloch D, Bole G, Borenstein D, Brandt K, et al. The Diagnostic and Therapeutic Criteria Committee of the American Rheumatism Association. Development of criteria for the classification and reporting of osteoarthritis: classification of osteoarthritis of the knee. Arthritis Rheum. 1986;29:1039–49.
2. Felson DT. The epidemiology of knee osteoarthritis: results from the Framingham Osteoarthritis Study. Semin Arthritis Rheum. 1990;20:42-50.
3. Thompson LR, Boudreau R, Hannon MJ, Newman AB, Chu CR, Jansen M, et al. The knee pain map: reliability of a method to identify knee pain location and pattern. Arthritis Rheum. 2009;61:725-31.
4. Thompson LR, Boudreau R, Newman AB, Hannon MJ, Chu CR, Nevitt MC, et al. The association of osteoarthritis risk factors with localized, regional and diffuse knee pain. Osteoarthritis Cartilage. 2010;18:1244-9.
5. Creamer P, Hochberg MC. Why does osteoarthritis of the knee hurt—sometimes? Br J Rheumatol. 1997;37:726–8.
6. Hochman JR, Gagliese L, Davis AM, Hawker GA. Neuropathic pain symptoms in a community knee OA cohort. Osteoarthritis Cartilage. 2011;19:647-54.
7. Bennell KL, Kyriakides M, Metcalf B, Egerton T, Wrigley TV, Hodges PW, et al. Neuromuscular versus quadriceps strengthening exercise in people with medial kneeosteoarthritis and varus malalignment: a randomized controlled trial. Arthritis Rheum. 2014;66:950-9.
8. Bennell KL, Hunt MA, Wrigley TV, Hunter DJ, McManus FJ, Hodges PW, et al. Hip strengthening reduces symptoms but not knee load in people with medial knee osteoarthritis and varus malalignment: a randomised controlled trial. Osteoarthritis Cartilage. 2010;18:621-8.
9. Pham T, Maillefert JF, Hudry C, Kieffert P, Bourgeois P, Lechevalier D, et al. Laterally elevated wedged insoles in the treatment of medial knee osteoarthritis. A two-year prospective randomized controlled study. Osteoarthritis Cartilage. 2004;12:46-55.
10. Ayral X, Pickering EH, Woodworth TG, Mackillop N, Dougados M. Synovitis: a potential predictive factor of structural progression of medial tibiofemoral knee osteoarthritis - results of a 1 year longitudinal arthroscopic study in 422 patients. Osteoarthritis Cartilage. 2005;13:361-7.
11. Wise BL, Niu J, Yang M, Lane NE, Harvey W, Felson DT, et al. Patterns of compartment involvement in tibiofemoral osteoarthritis in men and women and in whites and African Americans. Arthritis Care Res (Hoboken). 2012;64:847-52.
12. Van Ginckel A, Bennell KL, Campbell PK, Wringley TV, Hunter DJ, et al. Location of knee pain in medial knee osteoarthritis: patterns and associations with self-reported clinical symptoms. Osteoarthritis Cartilage. 2016;24:1135-42.
13. Wood LR, Peat G, Thomas E, Duncan R. Knee osteoarthritis in community-dwelling older adults: are there characteristic patterns of pain location? Osteoarthritis Cartilage. 2007;15:615-23.
14. Dixon AStJ. Progress in clinical rheumatology. London: Churchill; 1965: 313–329.
15. Cicuttini FM, Baker J, Hart D, Spector TD. Association of pain with radiological changes in different compartments and views of the knee joint. Osteoarthritis Cart. 1996;4:143–7.
16. Lethbridge-Cejku M, Scott WW Jr, Reichle R, Ettinger WH, Zonderman A, Costa P, et al. Association of radiographic features of osteoarthritis of the knee with knee pain: data from the Baltimore Longitudinal Study of Aging. Arthritis Care Res. 1995;8:182–8.
17. Spector TD, Hart DJ, Byrne J, Harris PA, Dacre JE, Doyle DV. Definition of osteoarthritis for epidemiological studies. Ann Rheum Dis. 1993;52:70–4.

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