ORIGINAL ARTICLE

TENDONITIS: THE MAJOR CAUSE OF PAIN IN OSTEOARTHRITIS KNEE JOINT

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Background: The conventional concept of osteoarthritis is that it occurs as an aging and degenerative process resulting in reduction of the surface cartilage, narrowing of the joint space and reduction of the synovial fluid. The objective of this study was to introduce the new technique of unmasking and treating the underlying problem confirming lesions outside the knee joint being the cause of pain in osteoarthritic knee joint. **Methods:** Clinical work making the base of this paper was carried out at Pain and Plegia Centre, Dabgari Gardens Peshawar from 2005 to 2012. Patients reporting with knee pain were palpated deep around the knee joint and major tender spots identified upon Adductor tubercle on medial aspect and Gastrocnemius (lateral head) on lateral aspect proximal to the knee. These lesions were injected each with 20 mg of Triamcinolone Acetonide diluted in 2 ml of Xylocaine 2%. **Results:** The lesions responded favourably to the simple treatment and patients of pain knee joint of various durations were completely pain free. The optimum healing time of the lesions was 10 days. **Conclusion:** Osteoarthritic changes inside the knee joint may not be the cause of painful knee, rather it can be a referred pain. Two lesions, Adductor tubercle on medical side and lateral head of Gastrocnemius on the lateral side proximal to the knee joint are identified to attribute to this pain.

Keywords: Pain, Knee Joint, Osteoarthritis, Tendonitis

INTRODUCTION

Osteoarthritis (OA) affects more than 20 million individuals in the United States, though statistical figures are influenced by how the condition is defined that is, by self-report, by radiographic or symptomatic criteria, or by a combination of these.[1] Primary osteoarthritis is a common disorder of the elderly, and patients are often asymptomatic. Approximately 80–90% of individuals older than 65 years have evidence of radiographic primary osteoarthritis.[2,3] The conventional concept of osteoarthritis is that it occurs as an aging and degenerative process resulting in reduction of the surface cartilage, narrowing of the joint space and reduction of the synovial fluid. The cartilage protects the underlying sub-chondral bone by distributing large loads, maintaining low contact stresses, and reducing friction at the joint. So it is postulated that reduction of these protective functions cause pain in the joint. Although primary osteoarthritis is related to the aging process and typically occurs in older individuals, in the broadest sense of the term, it is an idiopathic phenomenon, occurring in previously intact joints and having no apparent initiating factor.

The high prevalence of osteoarthritis entails significant costs to society. Direct costs of osteoarthritis include clinician visits, medications, and surgical intervention. Indirect costs include time lost from work. Costs associated with osteoarthritis can be particularly significant for elderly persons, who face potential loss of independence and who may need help with daily living activities. As the populations of developed nation's age over the coming decades, the need for better understanding of osteoarthritis and for improved therapeutic alternatives continues to grow.[4]

In previous studies the clinical features of old age, higher BMI, varus deformity and multiple involved joints were found to be associated with more rapid progression of knee osteoarthritis.[5] Pain is usually the initial source of morbidity in osteoarthritis, with the disease's primary symptom being deep, achy joint pain exacerbated by extensive use. Also, reduced range of motion and crepitus are frequently present. Stiffness during rest (gelling) may develop, with morning joint stiffness usually lasting for less than 30 minutes. Initially, pain can be relieved by rest and may respond to simple analgesics. However, joints may become unstable as the osteoarthritis progresses; therefore, the pain may become more prominent (even during rest) and may not respond to medications.[4]

Intra-articular pharmacologic therapy includes injection of a corticosteroid or sodium hyaluronate (i.e., hyaluronic acid [HA] or hyaluronan), which may provide pain relief and have an anti-inflammatory effect on the affected joint.[6,7] In patients with osteoarthritic knee pain, steroid injections generally result in clinically and statistically significant pain reduction as soon as 1 week after injection. The effect may last, on average, anywhere from 4–6 weeks per injection, but the benefit is unlikely to continue beyond that time frame.[8] Some controversial evidence exists regarding frequent steroid injections and subsequent damage to cartilage (chondro-degeneration). Accordingly, it is usually recommended that no more than 3 injections per year be delivered to any individual osteoarthritic joint.[4] A randomised,

controlled trial in patients with moderate-to-severe osteoarthritis found that arthroscopic surgery for osteoarthritis of the knee provided no additional benefit beyond that afforded by optimised physical and medical therapy.[9]

The objective of this study was to introduce the new technique of unmasking and treating the underlying problem confirming lesions outside the knee joint being the cause of pain in osteoarthritic knee joint.

MATERIAL AND METHODS

Clinical work of this study was carried out at Pain and Plegia Centre, Dabgari Gardens, Peshawar from 2005 to 2012. More than 1,000 cases of osteoarthritis of knee joint were treated in this period. They had undergone treatment with physiotherapy and were on conservative treatment with analgesics. Some of them had also been injected steroids in the knee joint in the past. The duration of their problem varied from 6 months to 5–6 years and more. Age range was 35–65 years. All those cases of pain knee that were having appreciable pain for the last six months and beyond, and were labelled being the cases of osteoarthritis but without complications were taken as standard cases of OA Knee Joint.

All those who had developed pain following traumatic injuries and accidents were isolated from the category of OA Knee Joint for the purpose of this study. Cases of pyogenic arthritis were also isolated from this category because of complicated clinical presentation, complicated treatment modalities adopted and variable results.

Knee was made pain free by physical therapy. Patients laid supine on the coach and flexed knee. Deep palpation was done all around the knee joint using thumb of the right hand. Points of tenderness were identified. Triamcinolone Acetonide 40 mg. was taken in a syringe and diluted with 2 ml Xylocaine 2%, preferably with Adrenaline. Points were injected with 2.5 ml. of this solution at each site delivering 20 mg of the active drug to the lesion. As supportive therapy Diclofenac Sodium was injected in the gluteal region, and Ibuprofen 400 mg given TID orally for 5 days with Calcium and Vitamins as supportive therapy. Follow-up was carried out after ten days. If any residual problem was noted, repeat injection was given.

RESULTS

Patients felt good relief. On their first follow-up after 48 hours they felt confident and expressed positive hopes about the success of treatment. Ten days were required for optimal healing and patients exhibited 80–90% relief at the end of this time. Deep palpation was carried out at the follow-up to identify any point of appreciable tenderness. It was essentially around the same major sites, the reason being that the lesion would have involved certain area around the major trigger spot.

DISCUSSION

The treatment goals of knee osteoarthritis include alleviation of pain and improvement of functional status.[10] Optimally, patients receive a combination of non-pharmacologic and pharmacologic treatment.[11] These treatment approaches are conservative and results are transient. Thus these have failed to be remedial to the problem of the patients. A patient has to remain on these treatments and has to continuously take medications and physical therapy to spend a manageable life.

In the prevailing conventional concepts, osteoarthritic changes in the joint are attributed towards the cause of pain knee joint. Doubt persists about this concept and medicine is bewildered about explaining the cause of pain knee. It is concluded in the books of medicine that the presence of OA changes cannot necessarily be taken as an explanation of patient's problem.[3] As the aetiology of pain knee could not be established with certainty, thus till date no effective treatment could be devised so as to render a cure for the pain knee commonly termed as OA knee joint. In our working with treating pain knee for more than a decade it is now confirmed that the problem is not due to the OA changes inside the joint but due to lesions that are outside the joint proper.[12] Despite the fact that the patient may be exhibiting all the radiological and clinical findings of OA, still he will recover completely by treating these lesions.[12] These lesions are outside the knee proper and thus it occurs that pain knee is a referred pain and not an entity in itself. In studies that were designed to study the effects of therapeutic technique of acupuncture on pain knee joint, acupuncture treatment was found effective in relieving the pain of the joint.[13–15]

A randomized controlled trail concluded that the acupuncture treatment group experienced statistically significant improvements in self-reported pain and disability scores compared with a standard-care control group as late as four weeks after the end of treatment. However this effect diminished within 18 weeks after the final acupuncture treatment.[15] Such a long relief with a simple conservative technique is a success. Acupuncture form of treatment has proved to be most rewarding than physiotherapy as well as analgesics and provided new hopes for the patients. However its effect being transient did not resolve the problem. We studied the recurrence of pain in these patients and found that acupuncture treatment resolved the feeling of pain in the joint but was unable to heal these lesions that remained unattended and were the primary cause of pain that was being referred to the joint.[12] As the analgesic effect of acupuncture treatment wearied off these lesions again caused pain that was referred to the joint. The knee joint happens to be in

close proximity and is an organ very sensitive to pain, thus the pain caused by these lesions exhibits itself at the joint and in its surroundings, lesions themselves remaining masked. These points need to be treated to prevent any recurrence. Left as such, the patients may start exhibiting the same problem again after a month or two. This is what actually happened in the study carried out on the treatment of OA knee joint at the Department of Integrative Medicine, Maryland School of Medicine.[15] In that study, only the analgesic effect of acupuncture form of treatment was studied. Acupuncture was effective in relieving the localised inflammatory process, relieving the muscular spasm, bringing the group of muscles out of spasm and thus giving an overall relief to the patients improving their life style and joint functions. However, the trigger spots that were the organic cause of pain knee in these cases were neither palpated nor treated, rather were overlooked. Thus the pain started recurring within 4–6 weeks of treatment. These trigger spots are outside in close proximity to the joint and they exhibit soreness. On the medial side an isolated trigger spot is always found on adductor tubercle proximal to the knee. On the lateral side it is on the origin of lateral head of Gastrocnemius muscle. The later may even be higher up on the tendon and at times we have felt on palpation node in the tendon/soft tissue. This node is the site of maximum tenderness. The third trigger spot that occurs less commonly but none the less is also of paramount importance is above the popliteal fossa on the dorsum of the knee.[12]

This treatment regimen gives promising results and can be a source of new hope for patients. This work completely negates the conventional concepts about the aetiology of the pain knee. The trigger spots identified outside the joint proper are in the ligaments or tendons and at the fibro-osseous junctions.[12,16,18] These are highly tender points and patient can hardly bear the palpation at these trigger spots. The pain occurring at these trigger spots is referred to the most sensitive organ in near vicinity, the joint proper. Clinically our work has proved that OA changes have nothing to do with pain knee. Reduction in joint space, neither thinning of the surface cartilage nor drying of the synovial fluid is the primary cause of this problem. This technique is being explained for the first time and it is appropriate to term this problem as pain knee joint rather than OA knee joint.[12,17,18]

By the age of 65, 80% of people have radiographic evidence of OA though only 25–30% are symptomatic.[2,3] Thus among 80% who have radiological evidence of OA changes in the joint only a third exhibit symptoms of pain. It raises the question why the rest 70–75% of patients remain asymptomatic despite the fact that they also have those pathological changes. From these evidences it is evident that there may be another cause for this problem. Tendonitis being a complication of osteoarthritis, we can conclude that the complications of the OA (lesions on these trigger points) are in fact causing the pain and not the OA changes (inside the joint) themselves. Thus we shall direct our efforts towards treating the complications rather than the joint. These lesions may appear as early as at 35 years of age but exhibit maximum intensity of pain in moderate to severe OA and are invariably found in all those cases of osteoarthritis knee joint that clinically present with pain knee. Why these lesions develop in certain patients while others are spared is a question yet to be answered, but anyway they are well demarcated, identifiable and severely tender on deep palpation. The concept of these trigger spots gives the exact location of the problem and prevents us from working with the knee joint that in most of these cases is almost perfect and is not the site of pain.[2,12] These lesions when treated give complete relief from the symptom of pain knee within two days. Thus certain other treatment modalities would require to be postponed, till the time that the patient may escape any benefit from this new technique. However a big task is still lying ahead and this new algorithm needs to be authenticated and standardised by designing bigger treatment models at various centres, their results evaluated, and follow-up carried out. Till date this new algorithm gives us a clue of the aetiology of pain knee and a new effective/possible treatment technique.

In a study that evaluated the association between body mass index (BMI) and knee pain it was found that a higher BMI and a significant increase in BMI were predictors of bilateral knee pain at later year.[19] Hereditary components associated with osteoarthritis have long been recognised and several genes have been directly associated with it.[20–23] We found pain knee and identified these lesion in patients, majority among whom were not obese. Thus the factor of BMI did not play significant role, however hereditary component becomes stronger in giving a possible explanation to the presence of these lesions in the cases of pain knee who were not obese.

Physical examination findings in patients with osteoarthritis are mostly limited to affected joints.[24–26] We have certain new features to add to it. These are the trigger spots as explained before. These should be made a part of clinical examination of the knee through deep palpation technique. This simple procedure of identifying these lesions and injecting them gives complete relief to the patients and it tends to be a treatment of the problem rather than a conservative treatment with transient effects.[27] This development gives a new hope. It would result into giving altogether new direction to research and treatment on the subject.

CONCLUSION

Reduction in surface cartilage, in joint space, and in synovial fluid in osteoarthritis knee joint remains asymptomatic. Pain knee joint is a referred pain and is not the result of OA changes in the joint. Pain knee joint occurs due to tendonitis that is outside the joint: on the medial side it is upon the adductor tubercle, and on the lateral side it is upon origin of Gastrocnemius lateral head.

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