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ROLE OF LATERAL HEEL AND SOLE WEDGE RAISE IN OSTEOARTHRITIS KNEE

Orthopaedics

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ABSTRACT

OBJECTIVE: This study was aimed to determine efficacy of lateral heel and sole wedge raise in pain reduction in osteoarthritis knee.
METHODS: Total 54 patients of knee pain with radiological diagnosis of grade 2 and 3 OA knee were enrolled. Evaluation was done by Kellgren and Lawrence grading and numerical pain rating scale. Analysis was performed on SPSS software (windows version 22.0).
RESULTS: Mean changes in NPRS in group A were found statistically significant at 3 months (p-value = 0.011). In group B at first visit mean NPRS was 6.04±1.56 while at 3 months mean NPRS was 5.85±1.61. Mean changes in NPRS in group B was not statistically significant. On comparing both groups there was no significant changes between mean NPRS at 3 months.
CONCLUSION: The effect of lateral heel and sole wedge raise can bring some pain relief but it effects were not significant when compared with flat insoles.

KEYWORDS

Osteoarthritis (OA), Numerical pain rating scale (NPRS).

INTRODUCTION

Knee osteoarthritis (OA), a degenerative disease, is the most common form of arthritis in the knee. Knee pain was reported by up to a half of the individuals aged over 50, among which severe and disabling knee pain accounted for approximately 50%. The prevalence of obesity has been growing alarmingly in the world, concurrently with increasing predisposition to multiple co-morbidities. Knee OA has been associated with various risk factors, such as advancing age, female gender, genetic predisposition, prior knee injury, certain occupations, biomechanical gait and alignment defects, and obesity.

OA knee is managed by both conservative and surgical approach. Conservative treatments ranged from activity modification to physical therapy. Conservative treatments also include braces unloading the weight from the medial compartment of knee and wedged insoles, used for relieving pain and improving function in OA. Role of lateral heel wedge raise is very controversial as many studies favours its use while many studies discourages its use. We conducted this study to determine the efficacy of lateral heel and sole wedge raise in reducing the pain associated with knee OA.

MATERIAL AND METHODS

Study was conducted in department of physical medicine and rehabilitation in King George's medical university, Lucknow, India. 54 patients that attended outpatient department with complain of knee pain and with radiographic evidence of osteoarthritis knee were enrolled in the study. Patients were divided in 2 groups. Group A, patients were given 6mm lateral heel and sole wedge raise. Group B, patients were given flat insoles.

The patients were diagnosed with knee OA according to ACR criteria (10) and classified as grade II and III, according to the Kellgren Lawrence radiologic grading. Exclusion criteria were: presence of knee flexion contracture, hip and ankle pathology, involvement of the lateral compartment of the knee, history of knee surgery, signs of meniscopathy at physical examination, infective or inflammatory pathologies of knee, presence of trauma, intra articular injection within 6 months and physical therapy within 1 year.

Laboratory analysis of serum erythrocyte sedimentation rate was performed. Kellgren Lawrence radiologic grading was done according to the anteroposterior radiographs of the patients in standing position [1].

Demographic data was noted at initial assessment while NPRS was noted both at initial assessment and at 3 months.

Intra group comparisons were done by paired sample t test while inter group comparisons were done by independent sample t test. Analysis was performed on SPSS software (windows version 22.0).

RESULTS

Both groups were age and sex matched. Mean age of group A and B was 57.78±06.68 years and 58.96±06.36 years respectively. Mean BMI of group A and B was 26.32±2.59 kg/m2 and 26.88±2.31kg/m2 respectively. At first visit mean NPRS of group A was 5.81±1.86 while at 3 months NPRS was 5.59±1.91. Mean changes in NPRS in group A were found statistically significant at 3 months (p-value = 0.011). In group B at first visit mean NPRS was 6.04±1.56 while at 3 months mean NPRS was 5.85±1.61. Mean change in NPRS in group B was not statistically significant (Table 1).

On comparing both groups NPRS, there was no significant changes between mean NPRS at 3 months. Lateral heel and sole wedge raise in patients reduce NPRS significantly but on comparing with control group B, there was no significant difference in mean NPRS changes (Table 2).

Table 1

Characteristics	GROUP	
	A (Mean±SD)	B (Mean±SD)
Age (Years)	57.78±06.68	58.96±06.36
Weight (Kg)	66.78±10.34	67.65±10.70
Height (m)	01.59±0.11	01.59±0.12
BMI (Kg/m^2)	26.32±2.59	26.88±2.31
NPRS(Initial)	5.81±1.86	6.04±1.56
NPRS(At 3 months)	5.59±1.91	5.85±1.61

Table 2

GROUP	COMPARISONS OF VAS AT 3 MONTHS	
	INTRA GROUP	INTER GROUP
	p-value	p-value
A	0.011	0.432
B	0.161	

DISCUSSION

This randomized control study was conducted to compare effects of lateral heel and wedge and flat insoles in patients with grade 2 and 3 OA knee. The study was constructed on the hypothesis that use of a lateral heel and wedge raise in Knee Osteoarthritis can reduce the high forces on medial compartment, which can provide relief of pain and subsequently improvement of function. The results of our study were not in favour of using lateral heel and sole wedge raise. Maillefert et al. (2) also reported that no clinical differences were evident among the patients using laterally wedged insoles and neutrally wedged insoles. Though, his study also included grade 4 OA knee. Toda et al, also reported no significant pain reduction with a traditional wedged insole (3). Both these studies favoured the result of our study. In contrast, Wolfe and Brueckman (4), Brington (5) and Ozgul et al. (6) studies showed that lateral heel and sole wedge raise significantly lowered the levels of pain.

Bennell et al in 2011 conducted a randomized controlled trial to evaluate effect of lateral wedge insole in medial knee OA. The study concluded that lateral wedge insoles worn for 12 months provided no symptomatic or structural benefits compared with flat control insoles [7]. Study conducted by Baker et al found that customized lateral heel wedge insoles worn for two years were associated with a reduced intake of non-steroidal anti-inflammatory drugs, a secondary outcome, but did not alter pain, stiffness, function, or joint space narrowing on radiography[9]. A crossover trial found no statistical or clinical effect of a lateral wedge insole worn for six weeks[8].

Our results do not support the recommendations of clinical guidelines advocating the use of lateral wedge insoles for the management of medial knee osteoarthritis.

CONCLUSION

The effect of lateral heel and sole wedge raise can bring some pain relief but it effects were not significant when compared with flat insoles. For treatment of osteoarthritis knee other methods should be used. These include pain reducing drugs, physical therapy, injection corticosteroid/ hyaluronic acid/ prolotherapy and activity modification. Severe OA knee should be managed surgically.

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