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ACUTE EFFECT OF KINESIOLOGY MEDIAL TAPING OF PATELLA PATIENT OF CHRONIC OSTEOARTHRITIS KNEE WITH PATELLOFEMORAL INVOLVEMENT

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ABSTRACT Osteoarthritis is a worldwide most common problem in middle age people, Osteoarthritis is from time to time denoted to as deteriorating or wear and tear arthritis. Osteoarthritis might be result from injury to the knee previous in life. Fractures relating the joints surface, insecurity from ligament tears, and meniscal injuries can all reason irregular wear and tear of the knee joint. Patients and methods

Method: - 30 patients attending a hospital who fulfilled entry criteria were recruited for the study. Pre diagnosed Patients referred by orthopedic surgeons of SAIMS hospital Indore and those who fulfil entry criteria were considered for the study. The both Male and Female was taken in the study with age group of 55-65 years and who had knee symptoms since 1-3 years and dived into 2 groups experimental and control group. It is an experimental study of pretest and post-test. To find out the Acute effect of kinesiology medial taping over patella in decreasing pain as measured by VAS and Patellofemoral Joint Evaluation Scale in chronic primary osteoarthritis of knee with patellofemoral involvement. Result: - There were no statistically significant differences between the three groups in terms Percentage increase in patellofemoral joint functional scale rating from initial value in experimental group is 20.4% and control group is 10.06%. Percentage reduction of VAS score from initial value is experimental group is 20% and control is 4.6%. When comparing the percentage difference in reduction of VAS between experimental and control group, there is better reduction of pain in experimental group at the end of treatment.

Conclusion: The study revised a significant and reliable finding on the use of kinesiology medial tape in the treatment of pain in patellofemoral arthritis primary to a decreasing pain symptom and in improving functional activity.

KEYWORDS : Exercise, kinesiology taping, patellofemoral pain, osteoarthritis.

INTRODUCTION

Osteoarthritis is a worldwide most common problem in middle age people; Osteoarthritis is from time to time denoted to as deteriorating or wear and tear arthritis. Osteoarthritis might be result from injury to the knee previous in life. Fractures relating the joints surface, insecurity from ligament tears, and meniscal injuries can all reason irregular wear and tear of the knee joint. Not all cases of osteoarthritis are connected to prior injury, but research has revealed that some people are prone to develop osteoarthritis and this tendency may be hereditary. The main problem in osteoarthritis is degeneration of the articular cartilage that covers the joint mainly the patellofemoral joint. Patellofemoral joint arthritis includes mal-alignment and mal-tracking of the patella. Patellofemoral arthritis is the second most common musculoskeletal complaint person ted to physiotherapist. Meanwhile osteoarthritis disturbs the elderly more than any other age group. Humble economical management is needed for most common disorders such as knee osteoarthritis, which is not life threatening but can reason years of ache and handicap for a huge number of people in the community.

In expensive interventions that given patients some control over their symptoms are particularly attractive. If effective, they could decrease the economic burden of these patients as well as educating their quality of life. Current reports have highlighted the importance of the patellofemoral Compartment. In knee osteoarthritis, condition of this joint can reason Pain, predominantly when the patient is doing such activity like stairs, squatting or kneeling. Malalignment of patella with consequential abnormal force distribution on the Lateral facet, is thought to be the cause of these symptoms. Taping the patella to pull it medially followed by quadriceps exercises may provide simple therapeutic Measure.

Hence the purpose of this study is trying to find out the effect of kinesiology medial Taping of the patella in chronic primary osteoarthritis of the knee with patellofemoral involvement along with conventional treatment so providing a marvelous decrease in pain and provided that a near normal functioning knee for the Comfort of the patient.

REVIEW OF LITERATURE:

In 1973 Peyron and altman, et al British studies showed that 2.3% of men and 1.3% of women in the work Force had to retire due to osteoarthritis a loss of 4.7 million working days in 1974. Radiographs it is evident in 80% of individuals aged 55 years and older.

Traumatic conditions arthritis is the oldest and most widespread Pathological disorders testified in paleopathology. Former acknowledged in Dinosaurus, Arthritis has been continuous all the way through history. In hominidis, chronic arthritis has been observed from the time of Neanderthal man. Studies of musculo-skeleton after the Saxon and Roman era of early England have shown changes constant with osteoarthritis in at least half the Specimens.

According to Antoine Helewa, 1996 et al, Epidemiologic surveys show a strong association between osteoarthritis and wear and tear, prolonged immobilization, continuous pressure, impact loading anatomic abnormalities and previous inflammatory joint injury. No association was found between long- distance running and clinical evidence of osteoarthritis in the lower extremities. There is a recommendation in the research that body weight is positively related with osteoarthritis of knee; still a cause and effect relationship between osteoarthritis and obesity has not clearly identified.

In 1996 the study of Joan M.Walker, et al shows Prevalence varies from 4% among those aged 18-24 years to 85% among those Aged 75-79 years with an average of 37% overall. this research show It is more frequent in men below the age of 54 years but the sex-ratio is reversed thereafter. Mild to Moderate or severe involvement is more predominant in women than men by 6% after changing for age. No racial or urban-rural difference was found.

in 1976 study of Install J, Falvo, KA and wise DW et al found that Cartilage changes on the medial patellar facet of patellofemoral joint is More common, but changes originate on the lateral facet will normally Developed to osteoarthritis. Freeman, 1975 et al and Maroudas, 1976 et al said As the articular surfaces become increasingly malposed and the joint Unstable, cartilage at the edge of the joint degenerates to the more youthful activities of Progress and osteophytes formation.

In 1968 Liet FJ,Perry J, They studied the position of the patella in the fully extend or lock knee and reported that it lies on the femoral sulcus which is related to the size of the patellar tendon. The transverse and longitudinal surrounding structures impacts the lateral stability of the patella and its position in femoral sulcus and patellar tracking or path of the patella as it slides down the femoral condyles inside the intercondylar notch is sustained.according to Kaplan, in 1962 The pull of the quadriceps and the pull of the patellar ligament lie at a slight angle to each other producing a slight lateral force on the patella and

hereafter rise the compression on the lateral facets as it pushes hard in to the lateral lip of the femoral sulcus when knee is extended or to the lateral aspact of the intercondylar notch.

In 1976 Good fellow JW,et al ,found Failure of the patella to slide, tilt or rotate appropriately according to knee rotation, can lead to restriction in knee joint range of motion, to instability of the patellofemoral joint or to pain caused by erosion of the patellofemoral surfaces.

In 1979 Hungerford DS, et al shows The increased knee flexion and quadriceps muscle activity seen with stair Climbing or running hills may increase the patellofemoral joint response force to 3.3 times body weight at 60 degree of flexion. The joint response force may reach more 7.8 Times the body weight at 130 of knee flexion in such activities as deep knee bends when knee flexion is extreme and a strong quadriceps contraction is required. This effect joint compression on the patellofemoral joint and on the Medial facet specially.

Need Of The Study

To find out the acute effect of kinesiology medial taping over patella in decreasing pain as measured by VAS and Patellofemoral Joint Evaluation Scale in chronic primary osteoarthritis of knee with patellofemoral involvement

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Objective Of The Study

To compare the acute effect of kinesiology medial taping over short wave diathermy and isometric exercise in decreasing pain and improving functional abilities in patients with chronic primary osteoarthritis of knee with patellofemoral involvement.

HYPOTHESES:

NULL HYPOTHESIS:

Kinesiology medial taping over patella in chronic primary osteoarthritis of knee with patellofemoral involvement there is no significant difference in decreasing pain as measured by VAS and improving functional abilities as measured by Patellofemoral Joint Evaluation Scale over short wave diathermy and isometric exercise.

ALTERNATIVE HYPOTHESIS:

Medial taping over patella in chronic primary osteoarthritis of knee with patellofemoral involvement there is significant difference in reducing pain as measured by VAS and improving functional abilities as measured by Patellofemoral Joint Evaluation Scale over short wave diathermy and isometric exercises.

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4. There will be significant difference in effect of Neurodynamic technique in ROM asymmetry in control group compare to experimental group in diabetic neuropathy patient.

METHODOLOGY

30 patients attending a hospital who fulfilled entry criteria were recruited for the study. Patients referred by orthopedic-surgeons of SAIMS hospital Indore and those who fulfil entry criteria were considered for the study. The both Male and Female was taken in the study with age group of 55-65 years and who had knee symptoms since 1-3 years.

Inclusion Criteria

- Patients with chronic primary osteoarthritis of knee with patellofemoral involvement referred by Orthopedics surgeon of SAIMS hospital Indore.
- Age group 50 to 65 years old. Both male and female.
- Unilateral knee.
- Radiological changes in the knee typical of chronic primary osteoarthritis with involvement of patellofemoral joint with no deformity.
- Negative screen for rheumatoid factor.
- Pain predominantly emerging only from knee.
- Patients with current radiographs of knee to find out disease severity and compartmental involvement.

Exclusion Criteria

- Below age of 50 years and more than 65 years.
- Not taken Physiotherapy since 3months.
- Bilateral osteoarthritis of knee.
- Secondary osteoarthritis of knee.
- Arthritis of other cause such as septic arthritis, psoriatic arthritis, gouty arthritis, SLE.
- Muscle imbalance
- Excessive subtalar joint pronation.
- Patients with any systemic disease.
- Peripheral vascular disease.
- Any neurological involvement or disorder which may interfere with the treatment.
- Post-surgical conditions.
- Metals in or around knee..
- Recent trauma.

Sampling Method

Participants are chosen based on suitability sampling method .30 participants are separated into experimental group and control group with 15 participants in each group.

Measurement Tools

Visual analog scale, Patellofemoral joint Evaluation scale, goniometer, inch tape.

Outcome Measures

1. visual analog scale (VAS):

2. Patello femoral joint Evaluation scale for functional assessment: It contains of assessment of limping, assistive devices, stair climbing, crepitation, inability, giving way, swelling pain, and has a definite scoring system. Functional results were evaluated according to the patella femoral counting scale. Excellent results equal's 90-100 points, good 80-89, fair 60-79 and poor < 60 points.

Materials Used

Kinesiology tape, Scissors, cotton swabs , disposable, cleansing agent ,towels , straps, recording sheets and follow up chart, consent form and other stationery materials.

The experimental group 15 patients satisfying the criteria were included in this group. This group received short wave diathermy, isometric quadriceps exercise and also kinesiology medial taping of patella for a period of 7 days.

Procedure:

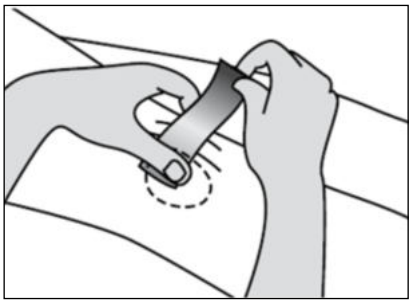
a) Short wave diathermy Position Lying with contra-planar pad placement over the knee. Frequency machine is 50 watts. Time Duration 15 minutes Sitting for 7 days of treatment including 1 sitting /day.

b) Isometric quadriceps exercise supine lying, ask the patients to hold the patella in cephalic position for 10 seconds and then relax. The contraction is carried out for 10 repetitions with rest in between. A total of 50-75 contractions is usually done.

c) Kinesiology Medial taping procedure Position the patient in relaxed, supported long sitting with the knee aligned in a neutral position. Start the kinesiology tape in the mid of the patella, at the equal of the superior aspect of the patella, move the skin on the medial side of the knee to the patella and pull the kinesiology tape medially. Placed the tape to the medial aspect of the knee impartial short of the hamstring tendons confirming there is some slight wrinkling of the skin (*Figure 1*). This tilts the lateral patellar edge away from the femur

Table 1 Demographical Data

VARIABLE	AGE	SEX	RIGHT	LEFT
Experimental group	50 year to 65 year	9 Male 6 Female	9	6
Control Group	50 year to 65 year	7 Male 8 Female	11	4



1. Medial Tilt And Medial Glide

To assess the acute effect of kinesiology taping, a pain provoking activity such as a single or double squat is performed immediately prior to taping and repeated afterwards .If the tape is applied correctly the post taping squat will be painless.

D) **Home Exercises**
- Quadriceps sets
- Straight leg raising Lying; one hip and knee bending, knee stretching and leg lowering
- High sitting, dynamic Quadriceps.
- knee stretching.

The Control Group
The control group received the same treatment as that of experimental group except medial taping procedure. Visual analog scale for pain and functional disability using patellofemoral joint evaluation scale was taken at the first day and on the 7th of the treatment in both the groups.

RESULTS & ANALYSIS

Demographic Analysis Of Data
Using Extended Chi-square test: Comparing the number of individuals in age class intervals between experimental and control group. Calculated Extended Chi-squared value (0.63) is less than the critical value (7.82) at 5% level of significance, showing that there is no significant difference in number of individuals of different ages between experimental and control group.

Analysis Vas Of Results
VAS:
1. Independent t test: Comparing the mean of difference between the pretest and post-test values of experimental and control groups. *f* Mean of the differences (d) between the pretest and post-test values of experimental group is 2.07 and that of control groups i.e.,0.45. *f* Calculated t value (5.84) is greater than t value (t=2.048) at 5% level of significance for two –tailed test, showing that there is significant difference between the two groups. So, the null hypothesis is rejected.

2. Dependent test: Comparing the initial and day 7 values of experimental group. *f* Mean pretest value is 6.78 and post-test value is 4.7. *f* Calculated t value (7.70) is greater than the table value (t= 2.145) at 5% level of significance for two –tailed test , showing that there is significant difference between the two values.

3. Percentage of difference: Percentage reduction of VAS score from initial value is experimental group is 20% and control is 4.6%. When comparing the percentage difference in reduction of VAS between experimental and control group, there is better reduction of pain in experimental group at the end of treatment.

Patellofemoral Joint Evaluation Scale
1. Independent t Test: Comparing the mean of the differences (a) between the pretest and post-test values of experimental and control groups. *f* Mean of the differences (d) between the pretest and the post-test values of experimental group is 20.4 and control group is 10.07. *f* Calculated t value (3.62) is greater than table value (t=2.048) at 5% level of significance for two –t ailed test, showing that there is significant difference between the two groups. So the null hypothesis is rejected.

2. Dependent t test: Comparing the initial and day 7 values of experimental group. *f* Mean pretest value is 50.26 and post-test value is 70.66. *f* Calculated t value (9.04) is greater than the table value (t=2.145) at 5% level of significance for two- tailed test, showing that there is significant difference between the two values. When comparing the initial and day 7 values of control group. *f* Mean pretest value is 52.8 and post-test value is 62.86. *f* Calculated t value (5.73) is greater that the table value (t=2.145) at 5% level of significance ,showing that there is significant difference between the two values.

3. Percentage of difference: Percentage increase in patellofemoral joint functional scale rating from initial value in experimental group is 20.4% and control group is 10.06%.

DISCUSSION:

The study is the randomized controlled trial to compare the effectiveness of taping technique with short wave diathermy and isometric quadriceps exercise in chronic patellofemoral arthritis of knee.

Analysis of the mean change in pain at knee had revealed a statistically significant difference at 5% level of significance in experimental group who received taping along with short wave diathermy, isometric quadriceps exercises and home exercises than the control group who received short wave diathermy, isometric quadriceps exercises and home exercise alone.

Results obtained after analysis of pain in experimental group shows that there is 15.4% reduction in pain which is statistically significant in those patients who received taping technique when compare with control group at the end of 7 day.

Analysis of Patellofemoral Joint Evaluation Scale in experimental group shows a significant improvement of 20.4% at the end of day 7. Results obtained after analysis of pain in control group shows 4.6% improvement at the end of day 7 using short wave diathermy and quadriceps exercise alone. Analysis of outcomes between pretest and posttest values of control group about Patellofemoral Joint Evaluation Scale shows that there is improvement of function of 10.6% at knee following short wave diathermy and quadriceps exercise on day 7.

The better results in the experimental group could be due to the acute effect of taping technique which provides reduction of pressure on lateral facet of the joint and thereby al so prevent tracking of patella. Pain reduction is also due to the effect of short wave diathermy in increasing vasodilation, increasing rate of nerve conduction and elevation of pain threshold. The improvement in functional score is due to alteration of muscle strength, acceleration of enzymatic activity and increased soft tissue extensibility due to isometric quadriceps strengthening.

Limitations
- The study was conducted over a short period of time.
- Sample size in this study was small.
- Parameters of outcome measures were Limited.
- No follow- up was done.
- All measurements were taken by the researcher himself, hence bias can be expected.
- No blinding of procedures was done which could bias the measurement taken.
- All the measures were taken manually and this may introduce human error.

CONCLUSION

The study revised a significant and reliable finding on the use of kinesiology medial tape in the treatment of pain in patellofemoral arthritis primary to a decreasing pain symptom and in improving functional activity. The proof to support medial kinesiology taping mechanism of pain reduction remains mysterious as the cause of patellofemoral pain itself, the positive effects of medial taping warrant the continued use of taping in the physiotherapy department.

While argument can be made that the mechanisms behind many treatment techniques are not known, it is important to recognize that the continued pursuit of supporting evidence is a paramount. Further research serves to clear the debate over such interventions and also may lead the researcher to even more effective methods of treatment, through a better understanding of its effects. The clinical significance of pain reduction also impacts the exercise area, as it has an inhibitory effect on the quality of muscle contraction, and is known to be a leading factor in the limitation of function. Patellar taping decreases patellofemoral pain, thus allowing for increased functional motion.

Patella kinesiology taping is a simple, safe, cheap method of providing short-term pain relief in patients with osteoarthritis of the patellofemoral joint.

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