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Original Research Article

A comparative study of McKenzie approach versus Mulligan mobilization with a common use of I.F.T in the management of Lumbar Disc Prolapse

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ABSTRACT

Background and Purpose : The purpose of this study was to compare the effectiveness of McKenzie's approach versus Mulligan's mobilization with the common use of interferential therapy in the management of Lumbar disc prolapse.

Materials and Methods: Thirty (30) individuals; aged between 20 to 45 years, presenting with prolapse inter vertebral disc with symptom duration within one month, were randomized into two groups. Group-A received the McKenzie approach with interferential therapy and Group B received Mulligan mobilization with interferential therapy. The treatment duration was four weeks.

Outcome Measures: Data was obtained on pain intensity levels i.e. visual analogue scale (VAS) and level of functional disability, Oswestry disability index (ODI).

Results: The mean score of ODI reduced from a mean of 37.8667 to 29.4667 in group-A (McKenzie approach with interferential therapy group) whereas in group B (Mulligan mobilization with interferential therapy) the mean score has been improved from 38.2667 to 16.8. The pain and disability score analysis within both group A (P= 5.9x10-07) and group B (P=1.7x10) shows significant improvement while inter-group comparison shows significant improvement in group-B subjects as compared to group-A (p=9.9x10-10).

The mean score of VAS had improved from a mean of 6.78667 to 4.44; mean in group-A (McKenzie approaches with interferential therapy group) whereas in group B (Mulligan mobilization with interferential therapy group) The mean score of VAS had improved from a mean of 6.98667 to 2.62; The score analysis for intergroup comparison showed the strength significantly improved in group-B subjects as compared to group-A subjects (p=5.17703 X 10-6).

Conclusion: The results of this study demonstrate that Mulligan SNAGs with interferential therapy is a superior treatment approach as compared to McKenzie's approach with interferential therapy in managing Lumbar disc prolapse.

1. Introduction

Low Back Pain is one of the greatest human afflictions and the most common medical problem that causes a significant amount of disability and incapability. The most common structure affected is the inter vertebral disc which is the prevalent source of Low Back Pain. The main feature of pain in the lumbar region is often accompanied by restriction in range of motion and functional limitations.[1] Sometimes, Low Back Pain is present with radiculopathy. Radiculopathy refers to the pain along the distribution of the nerve it can be unilateral or bilateral.

Some of the terms commonly used to describe the condition include herniated disc, ruptured disc, and slipped

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disc. Other phenomena that are closely related include disc protrusion, pinched nerves, sciatica, disc disease, disc degeneration, and degenerative disc disease. The popular term slipped disc is a misnomer, as the inter vertebral discs are tightly sandwiched between two vertebrae to which they are attached, and cannot actually "slip", or even get out of place. The disc is grown together with the adjacent vertebrae and can be squeezed, stretched, and twisted, all in small degrees. It can also be torn, ripped, herniated, and degenerated, but it cannot "slip".[2]

2. Epidemiology

Low back pain can occur at almost any age and does not discriminate among races or genders. There are many causes of low back pain with discogenic impairment being one of the most common. Next to the common cold, low back pain is the most common reason that individuals visit healthcare practitioners.[3] Almost all orthopaedic spinal impairments are the result of poor posture, faulty body mechanics, stressful living and working habits, loss of strength and flexibility, and the general decline of physical fitness.

Lumbar Disc Prolapse is estimated to account for approximately 37% of cases of low back pain. Back pain and its related disability cause an important socioeconomic burden to society.[4]

3. Materials and Methods

3.1. Study area

OPD of Burdwan institute of medical and life sciences (BIMLS). Burdwan.

Orthopaedic department of Burdwan Medical College and Hospital. Burdwan

Onset is usually between 20-55 years of age but most frequently from the mid -30s to 40s.

3.2. Study population

30 patients fulfilling the selection criteria are included in this study. They are randomly divided into two groups GROUP-A containing 15 patients and GROUP-B containing 15 patients.

3.3. Study period

6 Months

3.4. Sample size

30 patients were randomly selected based on inclusion criteria and divided into 2 groups containing 15 patients in each group.

3.5. Sample design

Convenient sampling

3.6. Selection criteria

3.6.1. Inclusion criteria

1. Prolapsed intervertebral disc in the lumbar spine.
2. Patients with low back pain with or without radiculopathy.
3. Male & female.
4. Age -20-45 years.
5. Pain increases after activity or loading.
6. The onset of pain is more than 4 weeks.

3.7. Exclusion criteria

1. Pregnancy.
2. Patients with a history of recent lumbar fracture.
3. Patient with any neurological disorder.
4. Patient with any cardiovascular disease.
5. Patient with lumbar surgery.
6. Un-cooperative patient.
7. Musculoskeletal pathological change e.g. rheumatoid arthritis, osteoporosis.

3.8. Equipments and materials used

1. Pen.
2. Pencil.
3. Paper Sheet.
4. Eraser.
5. Couch.
6. Stool.
7. Mulligan belt.
8. Laptop.
9. Pillow.
10. Patients consent form.

3.9. Need of the study

Low Back pain and its related disability cause an important socioeconomic burden to society.[5] Lumbar disc herniation or prolapse is believed to be a major contributor to the estimated 60-80% of lifetime incidence of low back pain in the general population.[6]

McKenzie's approach and Mulligan's mobilization both are effective in the conservative management of Lumbar PIVD.

Despite many studies, there are no studies found on the superiority of these two techniques along with IFT there is a need to know the difference in the effectiveness of McKenzie versus Mulligan along with IFT.

Hence, the purpose of the study is to find out the effectiveness of the McKenzie approach versus Mulligan mobilization with the common use of IFT in the management of Lumbar disc prolapse in reducing low back pain and Radiculopathy.

4. Aim of the Study

To compare the effectiveness of McKenzie exercises versus Mulligan mobilization with the common use of IFT in the management of lumbar disc prolapse.

5. Objectives of the Study

To find out the effectiveness of McKenzie exercises with IFT in patients with Lumbar disc prolapse

To find out the effectiveness of Mulligan mobilization with IFT in patients with Lumbar disc prolapse

To compare the effectiveness of McKenzie exercises and Mulligan mobilization with the common use of IFT in patients with Lumbar disc prolapse.

5.1. Outcome measures

Visual analogue scale (VAS).

Modified Oswestry disability index.

5.2. Procedure of data collection

After screening with inclusion and exclusion criteria the purpose of the study should be explained to the patients and then the patients who agree to give their voluntary consent in writing were for the study. 30 patients were randomly divided into 2 groups i.e.

Group A and Group B. The odd number of patients was taken as Group-A (15 patients) and the even number as Group B (15 patients). After grouping the patients underwent a detailed assessment according to the assessment chart then the therapist should give clear instructions about the exercise procedure to the patient.

6. Data Analysis

For the study, 30 patients with lumbar disc prolapse with pain in the lumbar region with or without radiculopathy were selected by using Simple Convenient Sampling techniques. There were groups present, Group A patients received McKenzie exercises and Group B received Mulligan Mobilization with the common use of IFT.

VAS and ODI were the measurements taken on the first day before the treatment and at the end of 4th week to see a reduction in pain and improvement in function.

Standard deviations (SD) were taken to see the variations in their Means + SD was calculated to see the variation within the group from the 1st day to the end of the 4th week between the pre-treatment and post-treatment (McKenzie exercises and Mulligan mobilization with common use of IFT) measurement by Visual Analog Scale ODI outcome score.

7. Results

Thirty individuals with lumbar disc prolapse participated in this study, none were lost during the study. The participants were randomly divided into two groups, group A and group B, each group containing 15 patients. Group A patients were given McKenzie exercises with interferential therapy (IFT) for 4 weeks and group B patients were given Mulligan mobilization with interferential therapy (IFT) for 4 weeks. The outcomes were measured by the Oswestry disability index (ODI), and visual analogue scale (VAS). Both the groups were considered homogeneous with regards to outcome measures values taken on the first day of assessment. Intragroup comparisons were analysed by paired t' test, whereas the intergroup comparison was assessed by independent Fischer's t' test. The data were analysed keeping the level of the level significance at 0.05.

The mean score of VAS reduced from a mean of 6.78667 to 4.44 in group-A (McKenzie exercises with interferential therapy) whereas in group B (Mulligan mobilization with interferential therapy) the mean reduced from 6.9866 to 2.62. The VAS SCORES for inter group comparison show significant improvement in group-B subjects as compared to group-A (p=5.177703 X10-6) thus indicating Mulligan mobilization with interferential therapy to be more effective towards pain reduction. Although, the intragroup analysis clearly shows both interventions are effective in pain relief and improving functional ability.

8. Conclusion

The results of this randomized clinical trial demonstrate that Mulligan mobilization with interferential therapy was found to provide a superior benefit in terms of pain reduction and improvement in functional range when compared to a treatment regimen consisting of McKenzie exercises with interferential therapy over four weeks in patients with Lumbar disc prolapse. However, both interventions appear to have a positive effect in reducing pain and increasing functional ability as a treatment for lumbar disc prolapse. As differences in all outcome measures were greater for Mulligan mobilization with interferential therapy, it seems to be the more effective treatment of choice for patients who are suffering from Lumbar disc prolapse.

9. Limitations of the Study

Almost every study has some limitations and this study in its course has also come up with some limitations due to some unavoidable practical, socioeconomic, and environmental factors.

Following are the limitations of this study

1. The duration of the study was only four weeks.
2. The size of the sample was only 30.

3. We had not considered other phases of lumbar disc prolapse.
4. No long-term follow-up was done.
5. We did not have any control group.

10. Recommendation of the Study

The following recommendations are made to carry out more fruitful studies in the future.

1. As the study was done for only the prolapse stage of lumbar PIVD, further studies on other stages can be done.
2. Strict follow-up can be done in order to observe the long-term outcome of the treatment protocol.
3. Further study can be done with some other Physiotherapeutic techniques because this study has been done with only the McKenzie approach and Mulligan mobilization with the common use of interferential therapy.
4. Studies can be done using MRI scan as an outcome measure to record the changes in disc before & after the interventions so.

11. Source of Funding

None.

12. Conflict of Interest

None.

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