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Review Article

Physiotherapy Section

McKenzie Mobilisation on Acute Lumbar Lateral Shift in Patients with Low Back Pain: A Narrative Review

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ABSTRACT

Low back pain is often associated with a lateral shift in the lumbar spine. McKenzie mobilisation produces a rapid reversal of the deformity and reduction in pain. The purpose of this review is to present an overview of the effects of McKenzie exercises in reducing pain and disability in individuals with an acute lumbar shift. A literature review was performed using four databases. All studies comprising the McKenzie method of treatment in the lateral lumbar shift were included. In total 18 articles were retrieved from the databases, of which six articles were finally selected to be included in this review. Six studies reported a reduction in pain, improvement in range of motion and reduction in disability. The present review identified supportive research for McKenzie treatment in individuals with an acute lumbar shift. However, more robust interventional trials are required to conclude the effectiveness of the McKenzie method in the acute lumbar list.

Keywords: Acute pain, Disc protrusion, Lumbar spine, Management, Manual therapy

INTRODUCTION

Low back pain is one of the most common cause of dysfunction. It leads to limitation in the functional activity and is a major public health problem worldwide [1]. Low back pain has an incidence rate of 1.5-36%. The lifetime prevalence rate ranges from 6.3-15.4% [2]. Low back pain triage is divided into acute, subacute, and chronic categories based on the duration of symptoms [3]. Acute or subacute low back pain is characterised by a sharp shooting pain that has a sudden onset that may or may not radiate down the buttocks or the legs; the presence of pain may be unilateral or bilateral and it results in restriction of movement [4]. The pain may radiate to the foot or may be restricted to the lower lumbar spine or buttock region. The change in position of the pain is associated with a change in posture or with certain activities, which suggests that mechanical loading in certain directions can affect the change in pain [5].

Patients with discomfort in the lower back region exhibit a lateral shift in the lumbar spine [6,7]. The acute onset of lumbar lateral shift (list or acute scoliosis) is often associated with low back pain [8]. The lateral shift in the lumbar spine is a temporary deformity and can be caused due to disc protrusion [9]. This deformity is related to a protective mechanism post disc protrusion to avoid further condensation of a disc on the nerve root [10]. Lateral shift exists when the upper vertebra is flexed or translated laterally to the right or left with respect to the lower vertebra, carrying the trunk with it. As a result, the individual may not be able to straighten or glide to an erect position. It has been found that even if they are capable of doing so, they are unable to hold the position achieved as the erect trunk position will lead to pressure on the nerve root at the level of compression [11].

In a lateral shift, the patient's body is deviated away from the affected site reflexively to avoid further compression of the nerve roots [12,13]. McKenzie describes a lateral shift in the lumbar spine as rotation and lateral flexion of a vertebra in reference to the vertebra below. This translates the trunk to the right or left in relation to the distal vertebrae. Failure to provide timely management of patients with acute low back pain can result in 2-33% of individuals suffering from chronic low back pain [14].

McKenzie correction method provides a single direction of repeated movement or sustained postures. This elicits a pattern of pain response call centralisation which refers to sequential and lasting abolition of all distal referred symptoms and subsequent reduction of any remaining spinal pain in response [15].

According to Gillan MG et al., patients treated with Mckenzie list correction method had greater improvement in dysfunction as compared to the management of the shift without treatment [14]. In previous studies done in individuals with lumbar shift, the method of McKenzie manual correction has been shown to result in superior outcomes compared to control treatment of non specific massage and general back care advice [15]. This supports the view that lateral shift correction procedure is very important in the management of patients with lateral shift deformity of the spine. This review aimed to provide a larger picture of the evidence of lumbar list management using the Mckenzie correction method.

LITERATURE SEARCH

Literature searches were conducted from inception to March 2021. Articles were electronically searched using the databases MEDLINE, Physiotherapy Evidence Database (PEDro), The Cochrane Library, and Cumulated Index to Nursing and Allied Health Literature (CINAHL). Keywords used were Lateral List, Lateral Shift, Acute Low Back Pain, McKenzie, Manual Therapy and Physiotherapy. The search process resulted in eighteen articles, of which six were considered relevant based on the selection criteria.

Inclusion criteria:

- English articles only available in full-text format.
- Research conducted on human participants.
- Studies that included McKenzie technique.
- Studies that included individuals with a lumbar shift.

Exclusion criteria:

- Studies investigating healthy populations.

DISCUSSION

Effect of McKenzie exercise on pain: A lateral lumbar shift is strongly associated with intervertebral disc pathology [16]. The dynamic internal disc model, introduced by McKenzie states that pain and obstruction to movement in the lumbar spine are specifically due to dislodgement of the nucleus pulposus within the disc. If repeated movements

cause centralisation of the symptoms, it suggests that the annulus fibrosis and the pressure produced by the disc are in a normal. If the movements serve to peripheralise the symptoms, it suggests that the annulus fibrosis is not in good condition and the disc pressure mechanism is not functioning [17]. Donelson R, utilised the dynamic internal disc model and verified the correction of lateral shift where a reductive force was needed to correct the derangement whilst the symptomatic response was noted. In this study, subjects exhibited annular competence and intact fluid pressure of the dysfunctional disc once the symptoms were centralised (91% of 23 subjects presented with a positive discogram) [16].

Laslett M, conducted a case report on an individual with lumbar spinal deformity, Mckenzie lumbar spine listing correction method was performed for three days which led to a reduction in pain and the deformity abolished, the patient was able to return to play in two months, long-term follow-up were performed which revealed improvement with a higher level of functional activity and sport [17].

Effect of McKenzie exercise on range of motion: In the McKenzie lateral shift correction treatment technique, the individual stands with feet shoulder-width apart and the therapist adopts a position either sitting or standing where the manual procedure can be carried out comfortably. The therapist performs side gliding mobilisation on the patient by pushing the hips and pelvis horizontally while applying counter-pressure to the trunk in a horizontal plane. This procedure is repeated for 10-15 repetitions, thus leading to centralisation of symptoms and reduction in pain. The second step involves a self-correction procedure where the individual is instructed to bend backward while manual shift correction is maintained. This helps in the restoration of lumbar lordotic curvature [7].

Directional preference is a primary criterion in the examination and treatment of lumbar spinal pain [18]. McKenzie development therapy has used directional preference exercises in the management of low back pain. Directional preference exercises have been defined as a repeated movement that induces centralisation of symptoms thus leading to a decrease in pain and increase in range of motion. These findings are supported by a case series reported by Long A et al., that directional preference exercise has a better outcome as compared to non specific exercises [19].

Effect of McKenzie exercise on disability: To achieve better functional activity after an injury and to reduce disability, an active rehabilitation program is advised [20]. Czajka M et al., conducted a study to compare the effect of Mckenzie and other physiotherapy methods on pain, disability level, and concluded that McKenzie development therapy has a better outcome in reduction of pain and disability [21].

CONCLUSION(S)

The McKenzie technique assists in lateral shift deformity correction and mainly in symptom resolution. This technique is systematic and progressive. McKenzie assessment is known to be an effective way in identifying symptomatic disc pathology and also helps to identify the inclusion and exclusion of patients in the therapy. McKenzie method is found to be an effective technique in correcting trunk deformity related to disc pathology and this method aids the patient's return to normal functioning capability. Primarily, self-management by the patient should be encouraged by the patient and instructions and education should be given throughout the entire program. This aids in symptom resolution and prevention and management of re-occurred low back pain.

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