



Case report

Application of classification based cognitive functional therapy for a patient with lumbar spinal stenosis: A case report



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ABSTRACT

This report describes the case of a 52 year old male administrative assistant presenting with symptomatic lumbar spinal stenosis (LSS). Despite patho-anatomical considerations, the patient's pain related functional behaviour, mal-adapted presentation, motor control strategies, incorrect belief system, and faulty cognition of associating disc healing with a lordotic posture adversely contributed to his presentation. With limited specific guidelines in the literature for this specific lumbar spine condition, the patient response during the assessment guided the intervention. Treatment that incorporated a cognitive functional therapy resulted in a successful outcome. The patient attended for twelve treatment sessions in three months and demonstrated improvement in overall function. By week 12, the Oswestry Disability Index (ODI) reduced from 68% to 19% and further reduced to 15% at three months following discharge. The patient's self-reported tolerance for standing improved from 10 min to 60 min and his self-reported tolerance of walking improved from 200 m to three kilometres. The effects were maintained three months post discharge. This case report supports the clinical utility of a patient-centred multidimensional classification system that utilised cognitive functional therapy in a patient with LSS.

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1. Introduction

Lumbar spinal stenosis (LSS) is described as diminished space available for neurovascular structures in the lumbar spinal canal (Watters et al., 2008). Symptomatic LSS manifests as positional induced neural claudication and/or radicular leg symptoms with or without back pain (Englund, 2007). Standing and walking are provocative activities whereas sitting and flexion relieve the symptoms (Ebell, 2009).

Posterior decompression laminectomy substantially improves pain and function in LSS (Weinstein et al., 2010). However, conservative management is recommended for moderate cases of LSS (Kreiner et al., 2013). Evidence for specific type of physiotherapy intervention is lacking in the literature (Macedo et al., 2013). One explanation could be the bio-psychosocial and multifactorial (patho-anatomical, physical, neurophysiological, psychosocial) nature of lower back pain (LBP), wherein the relative contribution and the dominance of each factor vary for each patient (Waddell, 2004). This variability drives the need for further sub classifying patients, based on the relative contribution and dominance of each factor (Waddell, 2004 and; O'Sullivan, 2005). This has led to the development of the multi-dimensional Classification system (MDCS) and patient centred cognitive functional therapy (CFT) by O'Sullivan in 2005. This

approach supports the notion that any lumbar spine condition whether it is specific or non-specific, might be associated with adaptive or maladaptive movement patterns. In a specific lumbar spine condition such as LSS, A maladaptive movement pattern could result in functional increase in the lumbar lordosis and associated with abnormal loading of the articular and neural tissues that consequently acts as an underlying mechanism for ongoing peripheral nociceptive activities and subsequent central sensitization with chronicity (Dankaerts & O'Sullivan, 2011). Thus, LSS could be amenable to physiotherapy intervention that targets the patient's maladaptive movement patterns, functional limitations, cognitive factors, belief system, coping strategies, lifestyle factors, and specific musculoskeletal impairments on an individual basis (O'Sullivan, 2005).

This case report discusses the clinical utility of the MDCS and CFT for a patient with symptomatic LSS. Physiotherapy intervention targeted the patient's maladaptive movement pattern, motor control strategies, faulty cognition, and belief system thereby resulting in a successful outcome.

1.1. Clinical presentation

A 52 year old male administrative assistant presented in June, 2013 with a four month history of gradual onset of lumbar spine

and lower limb symptoms. In addition to 'mild' back pain (pC), the patient's symptoms were (Fig. 1):

1. Right buttock/posterior thigh pain and intermittent paraesthesia (pA).
2. Intermittent, right postero-lateral thigh, lateral calf pain and intermittent paraesthesia to the dorsum of the foot, first, second and third toes (pB).

The patient's functional limitations included a standing tolerance of 10 min and a walking tolerance of 200 m that were associated with escalating pA from 3/10 to 8/10, pB from 3/10 to 6/10, onset of posterior thigh, foot paraesthesia, and occasionally posterior thigh cramp. Once aggravated, symptoms would reduce to baseline levels within a few minutes if the patient sat or stood against a wall.

The patient reported no gait disturbances, saddle area anaesthesia/paraesthesia, or bladder and bowel dysfunction. He denied morning stiffness, previous injury, trauma or similar episodic symptoms. His general health was unremarkable with no history of hypertension, diabetes mellitus, peripheral neuropathy or vascular disease. Current medications included Lyrica (75 mg twice daily) and Panadeine Forte as required. Previous physiotherapy treatment included manual therapy (mobilization/massage), postural correction, core stabilization exercises and advice to avoid bending. Four months of treatment resulted in a 10% reduction of the leg symptoms with no improvement in the standing and walking tolerances.

1.2. Screening tools

The patient's score on Leed's Assessment of Neuropathic Symptoms and Signs (LANSS) (Bennett, 2001) was 8/24. He responded 'yes' to questions one through four and 'no' to questions five through ten on the LSS self-administered questionnaire (Konno et al., 2007a, 2007b), which is in the absence of bilateral numbness around the legs and sole of the feet supported the diagnosis of LSS without cauda equina lesion.

1.3. Investigations

Computed tomography (CT) revealed a large central and right paracentral disc protrusion at the L4/L5 level with severe central

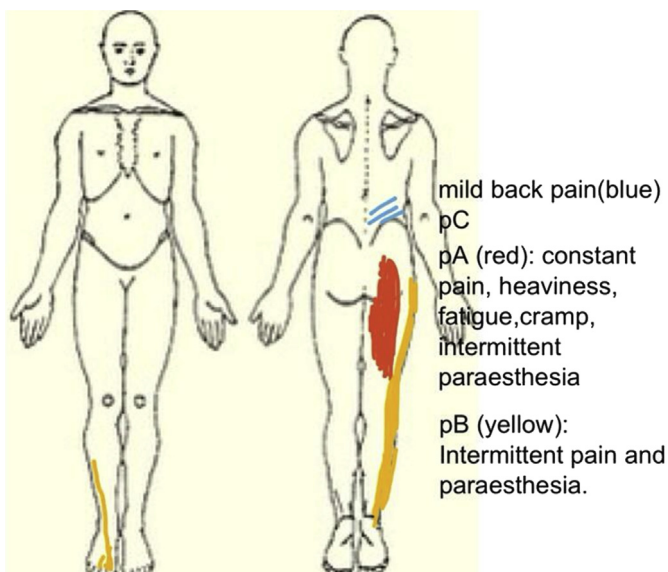


Fig. 1. The patient's symptoms distribution.

canal, right lateral recess and mild bilateral foramen stenosis at the L4/L5, L5/S1 levels with likely right L5 nerve root impingement (Figs. 2 and 3).

1.4. Patient's belief, goals and expectations

The patient believed that the ruptured disc was the source of symptoms. Therefore, based on structure based beliefs the patient envisaged that maintaining good posture, performing core stabilizing exercises and avoiding bending would prevent further deterioration and promote healing. He consulted an Orthopaedic Surgeon who recommended a trial of physiotherapy. His expectations and goals were to reduce his symptoms and increase his walking tolerance to five kilometres as per his pre morbid levels.

1.5. Clinical examination

The patient maintained his lumbar spine in excessive lordosis with an excessive anterior pelvic tilt during functional activities such as gait, sit to stand, and standing. Forward bending was associated with hip flexion and maintained lumbar lordosis. Lumbar extension beyond 20°, right side flexion and right rotation beyond 20 and 30° respectively reproduced the patient's symptoms. He was unable to initiate posterior pelvic tilt without associated hip flexion in standing, sitting and supine position. These activities were associated with breath holding and excessive activation of the erector spinae, rectus abdominas and external obliques muscles. He walked with a lordotic posture, anteriorly tilted pelvis and a reduced stance phase on the affected side when symptoms were exacerbated during walking. However, upon encouragement of normal breathing, relaxed posture with posterior pelvic tilt and reduced lumbar lordosis against the wall, the patient reported significant reduction in symptoms.

Lumbar passive physiological intervertebral movements (PIVM) were reduced in flexion and left side flexion at the L4–L5 & L5–S1 levels. There was no marked focal bony tenderness over the lumbar spine. However, grade three postero-anterior pressures centrally and unilaterally on the right at L4–L5 and L5–S1 reproduced pA and pB. Neurological examination was normal when performed in the resting position. However, following a repeat neurological examination after symptom onset in standing (provocative neurological examination), the patient reported reduced sensation to light touch in the right L5 nerve root distribution with marked weakness of extensor hallucis longus (great toe extension). Reflexes, skin colour, temperature, and vascular pulses (Judge, 2007) for femoral, popliteal, dorsalis pedis and posterior tibial arteries were normal. Slump, straight leg raise, sacroiliac provocation

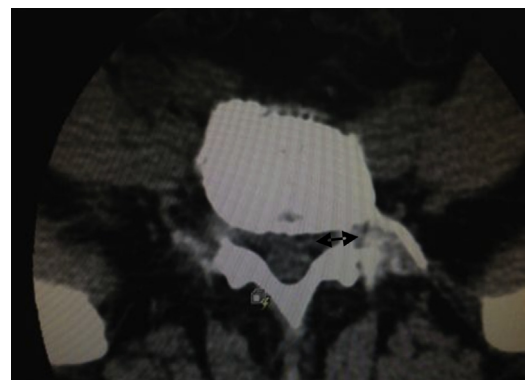


Fig. 2. CT scan. Arrow indicate right lateral recess stenosis.

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