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Evidence Based Patient Management Essay

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Introduction

The purpose of this paper is to consider the assessment and management of a patient using Mechanical Diagnosis & Therapy (MDT) as an optional approach in comparison to other available assessment and management strategies. The factors that potentially limit her recovery will be considered using a biomedical model in comparison to a biopsychosocial model. Finally, alternative treatment options will be discussed given the most current evidence available.

History

A 45 year old cleaner, Mrs. G, presents with complaints of low back pain, secondary to lifting a bucket at work 10 weeks ago. She currently complains of low back pain (VAS 9/10), bilateral buttock pain, and intermittent pain referred down the right leg to the right knee. The patient is currently not working, and sits at home watching TV which produces her leg symptoms. She is concerned that if "just sitting" makes her worse, she may never be able to return to work. She is afraid to move, exercise or return to work. Her X-ray shows wear & tear in the spine and another therapist told her she has problems with the joints in her spine.

Key Psychosocial Risk Factors:

I. If "just sitting" makes her worse, she may never be able to return to work (blue flag)
II. Afraid to move or exercise (yellow flag)
III. X-ray shows wear and tear in the spine (Yellow flag, iatrogenic factor)
IV. Another therapist told her she has a problem with the joints in the spine (Yellow flag, iatrogenic factor)

Educational Discussion

The Patho-Anatomical Approach or The McKenzie Method of MDT?

Mrs. G exhibits psychosocial risk factors that are barriers to her recovery and predispose her for developing chronic low back pain (LBP). She demonstrates yellow flags, blue flags and black flags. The 2 most prevalent classification systems used in the United States are a Patho-Anatomical classification system with a prevalence rate of 38%, and Mechanical Diagnosis & Therapy (MDT) with a prevalence rate of 32% (Spoto and Collins 2008). The Patho-Anatomical system is a biomedical model while MDT is a biopsychosocial model. Waddell (1987) first introduced the biopsychosocial model in contrast to the traditional biomedical model. He postulated that the use of analgesics and rest were harmful to the patient's recovery, and that controlled exercise restored

function, reduced stress, reduced illness behavior, promoted return to work and reduced pain. The psychosocial risk factors Mrs. G exhibits will need to be considered during her assessment and management. NHS Quality Improvement Scotland (2006) defined "Yellow Flags" as behavioral predictors that include iatrogenic factors, beliefs, coping strategies, distress, illness behavior and willingness to change. Blue flags, are issues of perceptions regarding work, while black flags are content specific aspects of work such as postures, lifting frequency & job heaviness. McKenzie and May (2000) define iatrogenic disability as disability induced in patients by the treatment or comments of a clinician. Having been told her x-rays show wear and tear and she has problems with the joints in her spine, places Mrs. G at risk for iatrogenic disability. McKenzie and May (2003) suggest that denying patients comprehensive guidance and education that assist with healing and regaining normal function can engender iatrogenic disability. Using MDT, Mrs. G would be informed that her "wear and tear" x-ray findings are common findings and should be of no concern. The Patho-Anatomical approach commonly uses radiological findings to diagnose patients. MDT recognizes when the radiological findings are inappropriately conveyed to the patient, it can engender iatrogenic disability.

MDT places a strong emphasis on patient self management through education given such high recurrence rates for LBP (McKenzie and May 2003). Prevalence rates as high as 85% have been reported for recurring LBP (Anderson 1999; Manchikanti 2000). This evidence highlights that self-management strategies should be a key component of Mrs. G's management. The philosophy of MDT recognizes that patients want to know their diagnosis, prognosis, how they can self manage, and what tests and interventions are involved. Laerum et al. (2006) demonstrated that patients wanted to know what was being done and found during the examination, what was causing the pain, a discussion of psychosocial issues, what could be done about the problem and reassurance. The most important characteristic they found was that the specialist took the patient seriously (empathy). Daykin and Richardson (2004) demonstrated that physical therapists using a biomedical model tend to label challenging patients as "difficult" to treat which lead to an inequality of treatment. The therapists use of this approach, led to non-evidence based bio-medically-oriented treatments. Many biomedical models such as the Patho-Anatomical Classification System are ill equipped to manage patients with psychosocial risk factors as they do not incorporate psychosocial research into the model. Current research and several clinical guidelines recommend that a classification system used to sub-classify low back pain (LBP) must include biomedical, psychological and social assessments (McKarthy et al. 2004). These studies provide valuable insight that could assist in the assessment, examination, and management of Mrs. G's current situation.

Self Efficacy

Mrs. G demonstrates poor self efficacy. Ormrod (2006) defined self efficacy as one's own ability to complete tasks and reach goals. Bandura (1977) first coined the term self efficacy and points to performance accomplishments as being the most influential in modifying behavior. MDT advocates using patient centered communication such as

active listening, open ended questions, empathizing, and taking the patient seriously to facilitate a patient/therapist alliance (Laerum 2006). Of the three communication styles used in motivational interviewing, the therapists use of a following and/or guiding style could help Mrs. G "discover" the coping strategies necessary for her recovery (Rollnick et al. 2008). Mrs. G reports leg pain while sitting, a common MDT finding of peripheralization. MDT might use postural correction in an attempt to centralize her leg pain. Mrs. G could then use this as a coping strategy which might improve her self efficacy and facilitate the discovery of additional self management strategies. With more performance accomplishments, Mrs. G's psychosocial risk factors could resolve as her self efficacy further improves. As a result, she may shift from an external to an internal locus of health control. MDT advocates the use of questionnaires to help quantify psychosocial risk factors. The Quebec Back Pain Disability Scale, The Roland Morris Disability Questionnaire and The Oswestry Disability Questionnaire could be used in this case (Esdaile et al. 1995; Roland and Fairbank 2000). If Mrs. G's psychosocial status didn't change or regressed, a referral to a professional counselor or behavioral psychologist could be considered. As a result of the aforementioned psychosocial risk factors involved, it becomes apparent that biomedical models such as the Patho-Anatomical model are inadequate. Therefore, a bio-psychosocial model, such as MDT, is suggested in the management of Mrs. G.

Biomechanical Risk Factors

Mrs. G exhibits bio-mechanical risk factors (black flags) associated with developing chronic low back pain. As a cleaner, her job requires frequent bending, leaning and heavy lifting. The most significant risk factors associated with cleaning are static muscle loads, bending and twisting (Hagner and Hagberg 1989; Hopsu et al. 1994; Sogaard et al. 1996; Kumar and Kumar 2008). Low back disorders have been implicated in occupations that involve forward and bent positions (Vingard et al. 2000). One study found the mean position of the back during mopping to be 28^0 of lumbar flexion (Sogaard et al. 1996). During the course of management, using MDT, these bio-mechanical risk factors would be addressed by teaching Mrs. G to counteract the repetitive and static forward bending with frequent backward bending in standing, sitting or lying. Patho-Anatomical models have an excellent track record for addressing bio-mechanical risk factors using ergonomics, job site analysis, work hardening and functional capacity evaluations. While these comprehensive interventions are effective, they are also time consuming and expensive. In contrast, MDT is feasible, providing preventative education to counteract the known causative factors.

Assessment and Classification Discussion

The McKenzie Method of MDT

MDT classifies LBP patients into 4 subgroups: Derangement, Dysfunction, Posture, and other. Centralisation, peripheralisation and directional preference are phenomenon characteristic of the derangement syndrome. Centralisation occurs when pain in the limb moves proximally after applying loading strategies in the directional preference.

Peripheralisation describes the opposite phenomenon. Directional preference describes the direction that decreases, abolishes or centralises symptoms. Tissue response techniques are used to understand the symptomatic and/or mechanical responses to specific loading strategies (McKenzie and May 2003). These phenomenon have been well documented in the literature (Williams et al. 1991; Karas et al. 1997; Werneke and Hart 2001; May and Aina 2012). An MDT assessment of Mrs. G would allow these phenomenon to determine classification and guide management. MDT assessments demonstrate good-excellent inter-rater reliability, with rates of agreement as high as 95% and Kappa scores of 0.92-1.0 (Sulfka et al. 1998; Werneke et al. 1999; Kilpikoski et al. 2002). Centralisation has been demonstrated to be a significant predictor of both good and poor outcomes in acute and chronic LBP populations (Donelson et al. 1990; Sufka et al. 1998; Long 1995; Rath and Rath 1996). Mrs. G describes peripheralisation when sitting, therefore, there are times when she achieves centralisation. Werneke et al. (2010) stated “The value of a classification system should be determined by its ability to direct treatment and enhance patient outcomes.” Using MDT as management option for Mrs. G provides reliability, a guided treatment approach, and the ability predict her outcome.

Mrs. G’s complaints of increased leg symptoms while sitting and her bio-mechanical risk factors suggest a provisional MDT classification of lumbar derangement syndrome. A group of 210 patients with back and or referred leg pain were randomly assigned into either a sitting kyphotic or lordotic posture. Adopting a lordotic sitting posture over a 24-48 hour period, patients experienced a 56% reduction in leg pain and a 21% decrease in back pain (Williams et al. 1991). The study demonstrated that when sitting, the use of a lumbar roll significantly reduced back and leg pain and produced centralization of pain. Mrs. G’s initial MDT examination would consider the therapeutic tissue responses to active postural correction in sitting, and lumbar roll positioning. There is little evidence of a common MDT procedure, slouch-overcorrect, and it’s effect on low back pain. Fryer et al. (2010) studied the effects of a chair care exercise they called extension/decompression. Using an MRI and stadiometry the exercise resulted in spinal decompression and favorable spinal lumbar curve changes. They concluded the activity to be a promising intervention to minimize the morphological changes associated with relaxed sitting, however, this study was performed on normal subjects. This typical Patho-Anatomical clinical reasoning doesn’t consider the potential tissue response of each individual patient. Using clinical reasoning in the context of MDT, slouch-overcorrect would be tested to determine it’s tissue response as a loading strategy, if it decreased, centralized or abolished Mrs. G’s pain, it might prove a useful intervention.

Finally, another study demonstrated the effectiveness of using an educational book to change behavior in patients with chronic LBP. Sixty-two subjects were given the treat your own back book (McKenzie 1997). One week after reading the book 51.62% reported a noticeable pain reduction. At a 9 month follow-up, 60% were pain free, and at 18 months the improvements were maintained (Udermann et al. 2004). To summarize, Mrs. G’s initial MDT examination would consider the therapeutic tissue responses to

active postural correction in sitting, repeated extension in sitting, and lumbar roll positioning as well as dispensing the treat your own back book.

The Patho-Anatomical Diagnosis

“Diagnosis is not only a prerequisite for treatment, it is also a central element of evidence based practice” (Spoto and Collins 2008). MDT and Patho-Anatomical models attempt to diagnose patients with LBP in very different ways. Patho-Anatomical diagnoses are determined using clinical provocation tests that are correlated with para-clinical tests (Radiology, MRI, and CT Scans). The subgroups in Patho-Anatomical methods imply patho-anatomical structures. May et al. (2006), in a systematic review of the most common procedures used to examine LBP, found poor inter-rater reliability in all testing procedures except timed muscle tests and tissue responses during repeated movements. They iterated that poor reliability could compromise the diagnostic process and compromise clinical outcomes. McKenzie and May (2003) point out that radiology, MRI and CT scans have consistently demonstrated poor specificity for specific pathology with a 40-50% false positive rate (van Tulder et al. 1997; Jensen et al. 1994; Weinbreb et al. 1989). The Patho-Anatomical model demonstrates poor clinical reliability, poor para-clinical specificity, and lacks the psychosocial interventions that are clearly needed in the management of Mrs. G. Further, Donelson et al. (1997) found the MDT assessment to be superior to MRI in distinguishing symptomatic verses non-symptomatic discs.

Other Treatment Options

Passive modalities do nothing more than provide short term relief, which is of little value once the acute phase of healing has passed. Mrs. G is now 10 weeks from her injury, well past the acute phase. Nordin and Campello (1999) state “No controlled studies have proved the efficacy of physical agents in the treatment of patients who have acute, subacute, or chronic low back pain.” McKenzie and May (2003) suggest “Manipulation, exercise, behavioural therapy and information provision are the only interventions supported by the literature regarding LBP.” Systematic reviews, RCT and meta-analysis studies of the effects of high velocity low amplitude spinal manipulation (HVLASM) are mixed. Some studies demonstrate improvements in ROM and LBP, others show improvements in ROM, but no change in LBP, while some studies show no benefit at all (Assendelft et al. 2003; Lisi et al. 2005; Santilli et al. 2006). Ernst and Canter (2006) performed a systematic review of systematic reviews of HVLASM. They concluded that spinal manipulation was not an effective treatment for any condition. They further suggested that spinal manipulation is not recommended as a treatment due to the possible adverse effects.

Brian Mulligan has suggested mobilisation with motions (MWM) in the treatment for low back pain (Mulligan 1995). One study sampled 467 therapists using MWM for LBP demonstrating a 54.4% improvement in lumbar flexion ROM, and a 27.5% immediate reduction in LBP (Konstantinou et al. 2002). A later study also demonstrated improvements in lumbar flexion ROM, but failed to demonstrate a reduction in LBP

(Konstantinou et al. 2007). Given the conflicting evidence, the possible risks, and Mrs. G's psychosocial risk factors, mobilisation and HVLASM should only be considered as a last resort.

Conclusion

It seems clear that MDT is a valid management strategy for Mrs. G as it covers the key components required for her functional recovery and provides long term self management strategies. Given Mrs. G's psychosocial risk factors, manual therapy and passive modalities would only reinforce her external locus of health control and provide no long term solution. Therefore using MDT is relevant for her and offers an excellent prognosis as well as long term strategies for self management.

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