



Conservative Treatment of Low Back Pain with Incidental Finding of Diffuse Idiopathic Skeletal Hyperostosis: A Case Report

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Introduction

Low back pain affects 630 million people worldwide and may result in a physical, social, or psychological liability to those people [1]. Patients with lower back pain commonly will have a higher incidence of functional disability, psychosocial issues, and decreased work productivity [1]. The clinician must provide the correct course of treatment for the patient, clinician [2].

Diffuse idiopathic skeletal hyperostosis (DISH) is a noninflammatory condition resulting from a pathologic calcification and ossification of areas of the spine and possibly other joints [3]. Several risk factors in developing DISH are advanced age, hypertension, diabetes, obesity, and genetics [4,5]. Individuals with DISH are typically asymptomatic; however, a study of two hundred individuals diagnosed with DISH demonstrated that 72% were experiencing back pain and 84% reported overall spinal stiffness [3,4].

Diffuse idiopathic skeletal hyperostosis is an incidental finding in imaging in which the pathogenesis is currently not known [3,4]. To diagnose DISH in the spine it is required to observe at least three bony bridges at the anterolateral spine [4]. The bony bridges are viewed as osteophytes on the anterior portion of the spine [3]. DISH in the cervical spine may lead to symptoms such as dysphagia or upper airway obstruction [3]. Additionally, in the spine DISH has been linked to compression of neural structures resulting in myeloradiculopathy [3]. Structurally, this can lead to spinal stenosis, and spinal cord or nerve root compression [3].

Currently, there is one published article describing chiropractic treatment of DISH with flexion distraction technique [6]. Al-Herz et al. [7] discussed exercise therapy for patients with DISH. Additionally, Le et al. [3] discussed, briefly, several strategies for the management of DISH. Current literature does not combine instrument-assisted manipulation, soft tissue therapy, and exercise therapy for the management of DISH. Therefore the purpose of this article is to demonstrate the effectiveness of exercise and manual therapy for the treatment of DISH related pain and dysfunction.

Case Report

A 66-year-old male presented for chiropractic care for lower back pain with radicular symptoms in the right hip. The patient reported being treated by a previous chiropractor for 5-6 weeks without significant relief of symptoms. The patient reported the mechanism of pain was shoveling several weeks prior. The patient reported the

symptoms were intermittent; however, the progression was worsening. The symptoms were aggravated by bending, shoveling, prolonged sitting, standing, and twisting. The patient did find some relief with movements, rest, and ice. The patient's past medical history included: skin cancer, stage three renal failure, and a stroke in 2014.

Physical examination demonstrated a restricted active range of motion of the lumbar spine in flexion, extension, right lateral flexion, left lateral flexion, right rotation, and left rotation. All ranges of motion were restricted mildly due to pain. Neurological examination of sensory, motor, and reflexes were all within normal limits. Orthopedic examination demonstrated a sacral thrust test for the lower back pain, and a positive one-legged standing extension test for the lower back pain. Straight leg raise, well leg raise, femoral nerve traction test, iliac distraction, iliac compression, Yeoman's test, Faber's test, Hibb's test, and Kemp's test were all negative. Muscle palpation demonstrated spasm and tenderness of the bilateral paralumbar, erector spinae, quadratus lumborum, piriformis, and psoas.

After a thorough history and evaluation and the patient's failure to respond to previous chiropractic treatment x-rays were ordered of the lumbar spine. The imaging reported diffuse idiopathic skeletal hyperostosis (DISH) involving the thoracolumbar spine, disc degeneration and facet joint osteoarthritis of L5-S1, bilateral sacroiliac joint osteoarthritis, hip morphology consistent with CAM-type femoroacetabular impingement, and atherosclerosis. A diagnosis of DISH with disc degeneration, and sacroiliac joint osteoarthritis along with segmental and somatic dysfunction of the sacrum and pelvis were documented.

The patient management plan consisted of instrument-assisted manipulation with an Impulse made by Neuromechanical Innovations® with manual and mechanical massage with the incorporation of rehabilitative exercises. The patient declined the rehabilitative exercises during the initial treatment. After two visits the patient had minimal improvement in the symptoms. The patient was referred to his primary care physician for further evaluation. The primary care physician referred the patient to a pain management specialist and the patient has prescribed medication to reduce the inflammation.

The patient returned to care and received instrument-assisted manipulation with impulse with soft tissue mobilization and was

encouraged to begin a rehabilitative program. The patient complied and was referred for rehabilitative exercises.

The patient has been prescribed rehabilitation exercises to increase the movement of the spinal segments and muscles to alleviate pain associated with his condition. The patient was seen four times for rehabilitation exercises. On the first visit, he reported a NAS pain of 2/10 with activity and 6/10 with rest. Over four visits this pain scale decreased to a NAS score of 0/10 with both rest and activity.

The prescribed exercises focused initially on neutral control of the spinal column with a focus on building endurance. The focus on endurance first allows the patient to work in a minimal-risk environment while developing motor control and endurance simultaneously. Had the patient presented for more visits the goal would have been to increase intensity via load while decreasing overall volume. This would have strategically allowed for the development of a baseline of endurance while progressing to more functional strength gains in the associated regions.

The patient's core rehab program is mapped out below.

Core stability exercise geared towards neural spine control.

Day 1: Side Plank – 3 sets 15 sec hold, Crunch – 3 sets 10 reps, Bird Dog – 3 sets 10 reps (modified to single arm then single leg lifts in quadruped due to balance issues)

Day 2: Dead Bugs 3 sets 10 reps, side planks 2 sets 30 sec., crunches 3 sets 12 reps

Day 3: Dead Bugs – 3 sets 10 reps, Side Plank 3 sets 15 sec., crunch-3 sets 10 reps

Day 4: Dead Bug – 4 sets 10 reps, Side plank – 4 sets 15 sec., Crunch 4 sets 10 reps

Discussion

In the case of this individual, he presented to the clinic after treatment from another chiropractor for several weeks without relief. The patient's lower back pain and radiculopathy to the right lower extremity was the main concern. The incident rate of DISH varies between 2.9% and 42.0% depending on demographic background and other risk factors [5]. Diffuse idiopathic skeletal hyperostosis previously known as Forestier's disease was first described in the early 20th century [5]. In 1976 it became known as Diffuse idiopathic skeletal hyperostosis after Resnick and Niwayama had published criteria for the radiographic findings to diagnose DISH [4].

There have been a few studies that discuss conservative noninvasive treatment for patients with DISH. Al-Herz et al. [7] discussed exercise therapy for patients that presented with DISH. Al-Herz et al. [7] studied patients with DISH along with lower back pain and/or stiffness. The study excluded any individuals that were not able to exercise due to other conditions such as rheumatoid arthritis or had back surgery in the previous three months [7]. The study went on for 8 weeks (about 2 months) and concluded after 14 visits. The subjects were supervised for 1 hour per session that including strengthening, mobility, and stretching exercises [7]. Additionally, while the subjects were participating in the study, pain medication such as acetaminophen, with or without codeine, and non-steroidal anti-inflammatory were maintained at a predetermined dosage [7]. After the study 15 out of the 17 original participants were able to complete the entire exercise program. One individual had to drop out of the study due to an increase in lower back symptoms. Eight participants reported an increase in spinal flexibility, six of the eight reported a decrease in lower back symptoms, and 7 participants felt either unsure of any benefit or felt no change in symptoms [7]. The results of the study demonstrated limited improvement in spinal range of motion (only in spinal flexion) for 53% of the participants [7].

Le et al. [3] briefly discussed the medical management of DISH

by medication and physical therapy; however, they did not mention specifically what exercises or conservative interventions are the most beneficial. Bronze [6] discussed utilizing the flexion/distraction technique to treat DISH in a patient with left hip and groin pain. This is a case report of a 69-year-old male that presented with lower spine pain radiating to the left hip and from the left hip to the pubic bone [6]. The patient further complained of numbness in the left anterior thigh [6]. The patient received treatment with flexion/distraction technique, and manual therapy, and was prescribed 2000 mg of chondroitin sulfate and 200 mg of hyaluronic acid to be taken twice daily [6]. The flexion/distraction technique was utilized twice per week and after four treatments the thigh and hip symptoms subsided and after 14 treatments the lower back was resolved [6].

Currently, there appears to be no specific conservative program for patients with DISH that are present with lower back pain. The purpose of the study was to focus on chiropractic care incorporated with rehabilitative exercises for patients with DISH that have symptomatic lower back pain. Although the patients that present with DISH and lower back pain may not regain the range of motion of the spine this program demonstrates a treatment plan that was able to decrease symptoms and increase function for this particular population.

Limitations

This was the report of one patient, and each case of DISH is unique. The patient reported lower back pain with mild radiculopathy. The patient's referral to the primary care physician and pain management may have assisted with the decrease in symptoms. However, the patient reported a decrease in the need for medication as he progressed through care. He attributed this to the significant decreases in pain. He also stated he was able to perform more pain-free movements while at work and during his ADLs. Therefore, despite the lack of improvement in ROM and significant palpation findings, the patient's pain scale and functional scale improvements demonstrated successful outcomes. The NRS and patient specific functional scale have both been shown to be reliable and valid [8,9].

Conclusion

This case report demonstrates the resolution of lower back pain with radicular symptoms in a 66-year-old male with an incidental finding of DISH that was treated conservatively with instrument-assisted manipulation, mechanical massage, and therapeutic exercises. Additionally, this study demonstrates that the treatment provided resolved the patient's complaints and improved the patient's active daily living and function. This case may demonstrate a treatment protocol with active therapy for patients who experience low back pain with an incidental finding of DISH.

Conflicts of interest : The authors declare no conflict of interest.

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