Chiropractic Management of Diffuse Idiopathic Skeletal Hyperostosis: A Case Series

Abstract

**Objective:** The objective of this report is to describe the chiropractic management of patients with spinal pain complicated by diffuse idiopathic skeletal hyperostosis.

**Methods:** Four patients with neck and/or back pain were examined and radiographs revealed DISH. The patients were diagnosed with vertebral subluxation, complicated by DISH at the cervical spine. All patients were treated with chiropractic manipulation using Diversified and/or Gonstead technique. Group Pre VAS scores were compared to group Post VAS scores using the paired t test. A statistically significant difference was considered to be present if the two-tailed p-value was < an alpha of 0.05.

**Results:** Follow-up VAS scores (mean = 0.875, standard deviation +/- 1.8) were significantly less (statistically speaking) compared to the initial VAS scores (mean = 8.5, standard deviation +/- 1.1) (p = 0.0051).

**Conclusion:** There is ample literature on the benefits of chiropractic care for neck and back pain but there is little literature on chiropractic care for patients with DISH. Chiropractic is likely beneficial for patients with DISH and further investigation is warranted.

**Keywords:** Chiropractic, adjustment, manipulation, Diffuse Idiopathic Skeletal Hyperostosis, DISH, subluxation

Introduction

Diffuse idiopathic skeletal hyperostosis (DISH), also known as Forestier's disease, is a common condition in the elderly that affects the spine and extremities with ligamentous calcification and ossification.\(^1\) It mainly affects males over 50 years of age. The incidence has been estimated at 12%\(^2\). DISH is characterized by flowing ossification at the anterior vertebral bodies with the appearance of “candle drippings.” DISH primarily affects the anterior longitudinal ligament.\(^1,2\)

DISH is distinguished from degenerative disc disease and degenerative joint disease in that the facet joints and disc are
typically unaffected. Diagnostic criteria include flowing ossification at the anterior aspect of the vertebral bodies of at least four contiguous segments, relative preservation of the intervertebral disc height, and lack of ankylosis at the facet and von Luschka joints. The lower thoracic spine is the most common area affected, followed by the cervical spine and lumbar spine. DISH typically causes pain and stiffness and rarely progresses to dysphagia and airway disturbance. DISH is associated with diabetes mellitus 13-32% of the time. Lab results are generally unremarkable.

There is no cure for DISH. Treatment is used to reduce symptoms and is typically conservative, with surgical intervention reserved for cases where hyperostosis is compressive. Analgesia, chiropractic, and diet modification are effective treatments. DISH may also be present with other articular disorders, such as rheumatoid arthritis or degenerative disease, and may be complicated by myelopathy or fracture.

A literature search was conducted using the Index to Chiropractic Literature and PubMed using the keywords “diffuse idiopathic skeletal hyperostosis” and “hyperostosis” for the chiropractic literature and “hyperostosis chiropractic” for PubMed. The results of the search were limited to a few case reports and reviews of the radiographic features.

Goh et al reported on the successful surgical management of a 55-year-old man with progressive dysphagia and dysphonia. The patient’s symptoms worsened over a 6-month period before being relieved by anterior cervical osteophytectomy without fusion. The authors reported that most cases of DISH can be managed conservatively, with chiropractic manipulation mentioned as an effective treatment.

Troyanovich and Buettner described the management of a patient with low back pain and DISH at the lumbar spine using chiropractic manipulation, lumbar traction, and range of motion exercises. The patient experienced symptomatic and functional improvement with treatment and the therapeutic effects were maintained at a follow up 19 months after the completion of active rehabilitation.

Foshang et al described the conservative management of a 63-year-old male who presented with dysphagia after a fall off a ladder. Flowing hyperostosis was present at the C3-C6 levels on radiograph. The patient was further evaluated with CT and barium swallow studies. He was successfully treated by a speech language pathologist and with diet modification.

Hoffman et al reviewed the radiographic features of DISH and reported on a series of four cases of DISH that were managed by doctors of chiropractic. One patient was referred for surgical consultation due to atlantoaxial instability secondary to rheumatoid arthritis. The other three patients experienced improvement with chiropractic manipulation.

Methods

Four cases were selected for inclusion in this case series due to the presence of the characteristic radiographic findings associated with DISH. Cases that had hyperostosis at less than four vertebral levels and cases that demonstrated significant degenerative disc or joint disease compared to ossification at the anterior longitudinal ligament were excluded. In all cases, the patient’s consent was obtained for publication of this case series.

The cases selected were males, varying in age from 57 to 65 years old, with an average (mean) age of 61.75 years. All four presented with pain at the neck and lower back or hip. A history was taken on each patient, including present condition, past, family, and social history and relevant systems review. The patients were examined using relevant orthopedic and neurological tests, and range of motion testing. Chiropractic analysis was done to determine the presence and location of vertebral subluxation using static and motion palpation, leg check and x-ray analysis procedures as taught at Sherman College of Chiropractic.

All patients were overweight or obese. One of the four was a diabetic. All patients were hypertensive. In all cases, range of motion at the symptomatic spinal area was restricted. Radiographs included AP and lateral views at the cervical or cervical and lumbar spine, depending on the presenting complaint. Three patients had DISH at the cervical spine, while one had DISH at the lumbar spine. There were no contraindications to chiropractic care. In one case, electrical modalities were contraindicated due to cardiac pacemaker. All patients were treated with chiropractic adjustments to correct vertebral subluxations using Diversified technique.

The average level of pain on presentation was 8.5/10 Visual Analog Scale (VAS). In three of the four cases, the patient’s pain resolved with chiropractic management, while in one case, the patient elected to discontinue care due to lack of insurance coverage when his pain was reduced to 3-4/10 VAS. In two of the four cases, the patients returned for treatment due to recurrences but the recurrent symptoms were mild and resolved quickly. The average number of manipulative adjustments was 13.25. In all cases, telephone follow up ranging from 1 to 11 months confirmed that the therapeutic benefits were maintained.

Group Pre VAS scores were compared to group Post VAS scores using the paired t test in Stata IC 12 (StataCorp, College Station, Texas). A statistically significant difference was considered to be present if the two-tailed p-value was ≤ an alpha of 0.05. The time between the pre and post VAS scores was 25, 14, 71, and 57 days for Cases 1-4, respectively.

Results

Summary statistics for VAS scores are provided in Table 1. Follow-up VAS scores (mean = 0.875, standard deviation +/- 1.8) were significantly less (statistically speaking) compared to the initial VAS scores (mean = 8.5, standard deviation +/- 1.1) (p = 0.0051). Although the sample size is small (n = 4), the difference between the Pre and Post VAS scores were large enough to provide sufficient statistical power (of 0.9).
Case 1

A 57-year-old male presented with extreme neck pain and minor mid and lower back pain. The patient reported that the pain onset 4 days prior after playing golf. He denied history of injury. He described sharp, constant neck pain, throughout the neck, worse at the left side of the lower cervical spine. He rated the pain 8-9/10 on the VAS. He reported that the pain interfered with all neck movement. He reported tingling at both hands. He described mild mid and low back pain.

He reported relief from past episodes of neck and back pain with chiropractic manipulation. The patient’s past surgical history included excision of a sebaceous cyst at the lower neck approximately one month prior to his presentation. A systems review revealed hypertension and type II diabetes and atherosclerosis producing peripheral vascular disease and resulting leg pain. The patient was employed as a realtor. The patient’s family history included cancer. The patient’s medications included metformin, gemfibrozil, lisinopril, and simvastatin.

The patient was 67 inches (170 cm) in height and weighed 240 lb (109 kg). Pulse was 98, blood pressure was 116/76 and respiration rate was 20. The patient’s active cervical range of motion was reduced in all movements. There was palpable spasm and tenderness at the suboccipital muscles and trapezius, with hypertonicity at the lumbar paraspinal muscles. Tenderness was present at C1-C2, C5-C7, T6, L4-L5, and sacrum. Palpable asymmetry and restricted motion was present at C1-C2, T6, L4-L5 and sacrum.

AP and lateral radiographs were taken of the cervical and lumbar spine. Bone density was normal, with no congenital anomalies apparent. There was a reversal of the cervical lordosis. Flowing ossification of the anterior longitudinal ligament was present from C2-C6, with preservation of the intervertebral discs. There was a decrease in the lumbar lordosis but imaging of the lumbar spine was otherwise unremarkable. Reading by an independent radiologist confirmed the radiographic findings.

The patient was diagnosed with segmental dysfunction of the cervical spine producing cervicalgia, complicated by diffuse idiopathic skeletal hyperostosis and segmental dysfunction of the thoracic, lumbar and sacral areas producing thoracic spine pain and lumbalgia.

There were no contraindications to spinal adjustments. The management consisted of chiropractic using Diversified technique at the cervical, thoracic and lumbar spine. The patient was adjusted once or twice per week for period of four weeks. Chiropractic care resulted in improved joint mobility and the patient reported immediate relief. During the course of the patient’s care he simultaneously underwent vascular surgery, consisting of a stent at the left femoral artery. The patient reported that his neck pain was reduced to 3-4/10 VAS at the 6th visit, at which point he elected to return for further care as needed.

Case 2

A 63-year-old male presented with neck pain and hip pain. He described severe (8/10 VAS), constant pain of one-month duration that he attributed to sleeping in an awkward position. He described the pain as feeling muscular. He reported that the pain interfered with his sleep and his sleep was reduced to 3-4 hours per night. He stated that applying heat helps. He reported pain radiating to the left shoulder and headache.

The patient also reported left hip pain, with pain radiating to the left lateral thigh that caused difficulty getting up. The patient’s past medical history included a history of vascular disease, with a blood clot at the right leg. His surgical history included aorta repair, pacemaker and femoral artery bypass. The patient was a disabled railroad worker. Medications included atorvastatin, aspirin, warfarin, gabapentin, and carvedilol. A review of systems revealed seasonal allergies and myopia.

The patient was of height 72 inches (183 cm) and weight 205 lb (93 kg). Pulse was 83. Blood pressure was 146/97. Active cervical range of motion was restricted in flexion, extension, left lateral flexion and left and right rotation, with increased pain on left lateral flexion and rotation. The patient described a tight, pulling sensation with neck movement. Cervical distraction test was positive (brought relief). Valsalva’s maneuver was negative. Straight leg raise produced hip pain on the left. Patrick’s test was negative. Internal rotation of the left hip was painful. There was spasm, tenderness and restricted intersegmental motion at C1, C2, sacrum and the left sacroiliac joint. Restriction was also palpable at the C5 level. There was spasm at the left lateral cervical muscles and left trapezius.

AP and lateral views were taken of the cervical spine. Bone density was normal, with no congenital anomalies apparent. The cervical lordosis was normal. There was hyperostosis at the anteriorly from C3-C6. Moderate disc degeneration was present at C5-C6 and C6-C7.

The patient was diagnosed with cervicalgia secondary to cervical segmental dysfunction, complicated by DISH, and lumbalgia secondary to segmental dysfunction at the sacral and pelvic areas.

Electrical therapies were contraindicated due to cardiac pacemaker. There were no contraindications to chiropractic care. The patient received five adjustments (supine Diversified cervical and drop sacroiliac technique) over a two-week period of time and he was given home care instructions to apply moist heat. At a five month telephone follow up, he was still asymptomatic.

Case 3

A 62-year-old male presented with neck and lower back pain. He described severe throbbing low back pain of two weeks duration, worse on the right, accompanied by neck soreness. The pain onset after crawling under a sink at his occupation in
A 65-year-old male presented with left shoulder and right hip pain. He described sharp, constant ache at the left lower cervical and upper thoracic area, with pain radiating to the left posterior arm of two weeks duration. He reported that the pain was worse in the morning. He rated the pain 7-8/10 VAS. He reported intermittent right hip pain of two days duration that worsened with walking. He reported numbness at both legs and feet with prolonged walking, worse on the left. The patient stated that applying heat or ice and analgesics helped temporarily. Past history included stent for TIÁ, surgery to treat sleep apnea, and splenectomy. The patient was a retired salesman. A review of systems revealed high blood pressure. Medications included anti-hypertensive drugs.

The patient was 70 inches (178 cm) tall and weighed 250 lb (113 kg). Pulse was 51. Blood pressure 163/105. The patient’s active cervical range of motion was reduced in extension, left and right lateral flexion, and right rotation, with pain on extension and a pulling sensation on flexion. Range of motion at the lumbar spine was painful with left rotation, with a pulling sensation on left lateral flexion and mid back pain on right rotation. Range of motion at the shoulders was normal.

Patrick’s test was positive on the right. Straight leg raise was negative. Valsalva’s maneuver was negative. Cervical foraminal compression produced upper back pain in the left and right lateral flexion positions (Jackson’s compression test). Shoulder depressor was negative. Cervical distraction was negative. Deep tendon reflexes were intact and symmetrical. Dermatome testing was normal, except for slight paresthesia at the left lateral thigh. There was asymmetry, restricted motion and tenderness at C4-C5, L4-L5, sacrum and right ilium.

AP and lateral views were taken of the cervical spine. There was a reversal of the cervical lordosis, with moderate degenerative disc disease at C4-C5 and C5-C6. A mild levocervical scoliosis was present at the lumbar spine. Flowing hyperostosis was present anterior to the T12-L3 vertebral bodies, with mild hyperostosis at L4-L5 and L5-S1 levels.

The patient was diagnosed with cervical disc degeneration and cervical segmental dysfunction producing cervicalgia, thoracic segmental dysfunction, and segmental dysfunction of the lumbar, sacral and pelvic areas producing lumbalgia, complicated by DISH at the lumbar spine.

The patient was treated with chiropractic adjustments (Diversified technique) at the cervical, lumbar, sacral and pelvic regions, electrical stimulation and hydrocollator to the low back, and intersegmental traction for the first seven weeks. He was also instructed on home exercises to improve neck flexibility and range of motion and low back exercises including pelvic tilt, knee chest, and bridge. He was managed for an additional three weeks with adjustments only. During the course of his care, the patient’s progress was slowed by the physical stress at his job doing apartment maintenance. He received 22 treatments over a 10-week period of time, at which point he was released with a resolution of symptoms.

He returned for 3 additional adjustments over the next 3 months, with recurrences of neck and back stiffness with his routine work activities as a maintenance technician. At an 11-month telephone follow up, the patient remained free of neck and back symptoms.
month follow up from his last appointment, the patient was still asymptomatic.

**Discussion**

The apparent benefits of chiropractic adjustments for neck pain and back pain for these four patients is reported here. Due to the relatively common nature of DISH, rigorously designed clinical studies on the chiropractic management of this condition are encouraged. The continued research will add to the currently limited amount of literature on chiropractic management of patients with DISH.

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**References**

Table 1. Summary Statistics for VAS scores

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