Diffuse Idiopathic Skeletal Hyperostosis

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Introduction

Diffuse idiopathic skeletal hyperostosis, commonly referred to as DISH, is a condition characterized by flowing ossifications along the anterolateral aspect of at least three successive spinal vertebral levels (four contiguous vertebrae). Often asymptomatic, the most common site of occurrence is right-sided thoracic spine. Formation here, as opposed to the contralateral aspect of thoracic spine, as well as predominantly about the anterior aspect of the cervical spine, is best explained by the pulsatile protective mechanical barrier theory (Bakker et al., 2017; Belanger & Rowe, 2001; Kuperus et al., 2020; Le et al., 2021; Luo & Varacallo, 2021).

DISH is rare in individuals younger than 50 years, with an increasing incidence positively correlated with increasing age. Men are slightly more affected than women, with the peak prevalence estimated at 28% of White men aged 80+ years. Although closely linked to metabolic disorders such as diabetes, obesity, and hyperlipidemia, the true pathogenesis of DISH remains unclear (Bakker et al., 2017; Belanger & Rowe, 2001; Kuperus et al., 2020; Le et al., 2021; Luo & Varacallo, 2021; Mader et al., 2013).

Case Presentation

A 72-year-old man presented for evaluation of acute chronic back pain associated with a ground-level fall 13 days prior to arrival. He had slipped coming out of the shower and described reaching out, catching himself on a shower bench, and lowering to the ground from there. Immediately following this incident, he noted right shoulder, mid to low back, and hip pain. The shoulder and hip pain had resolved within a few days, but the back symptoms lingered on. He had been wearing a lumbar support, using ice a few times a day, and taking acetaminophen “sometimes.” At the time of presentation, his back pain was described as a 3/10 aching pain, which was made worse by standing or walking for more than 30 minutes. It could be fleetingly acutely painful with bending or twisting motions or “out of the blue.” He denied radiating leg pains, numbness, tingling, or burning sensation. Also denied incoordination, weakness, clumsiness, or gait changes.

Prior to this incident, he had dealt with intermittent aching back pain and stiffness “for all his adult life.” Golf was a favorite pastime. Over the years, he had to limit his days of play, sometimes playing nine holes instead of a full round of 18, while also utilizing acetaminophen and ibuprofen for symptom management. He had completed a short course of physical therapy approximately 6 years prior and recalled it did help with pain management and flexibility. Admittedly, he had not kept up with the stretches and home exercises.

Upon presentation was an alert, oriented, affect-appropriate, abnormally obese man in no apparent distress. He ambulated with a steady gait without use of an assistive device. His standing posture was with a slight forward and left trunk deviation. No appreciable gross deformity was noted. There were no scars, abrasions, or discoloration about the back. Tenderness was noted about the right lumbar paraspinal region as well as locally about T10–T11 with percussion. The patient noted worsened back pain with flexion and self-limited range of motion. Bilateral lower extremity strength was 5/5, and he was found to be distally neurovascu larly intact. He displayed a positive Gaenslen’s and Kemp’s maneuver with a negative straight leg raise and slump.

Management

At the time of clinical evaluation, radiographs of the thoracic and lumbar spine were obtained (see Figure 1). Although unrevealing for any acute osseous abnormality, there was appreciable mild multilevel degenerative changes and flowing vertebral osteophyte formation extending over several of the thoracic segments, consistent with DISH. Given the ongoing back pain, with an increased probability for an occult osseous process, it was recommended that the patient proceed with advanced imaging of the spine. He had an aversion to magnetic resonance imaging, noting a “horrible” experience during a prior scan, and so was referred for computed tomography (CT) (see Figure 2). Fortunately, no acute osseous abnormality was identified (Belanger & Rowe, 2001; Kuperus et al., 2020; Le et al., 2021; Luo & Varacallo, 2021).

The patient was referred to physical therapy for stretching, core strengthening, postural cues, and pain relief modalities. He was instructed on spine precautions, with avoidance of heavy lifting, repetitive bending,
stooping, or twisting activities. He continued with more consistent use of ibuprofen and acetaminophen (Le et al., 2021; Luo & Varacallo, 2021).

At 1-month follow up, he reported resolution of the acute back symptoms but noted he had yet to return to playing golf. He had weaned the lumbar support for day-to-day activities. He did continue to report morning stiffness, with acknowledgment that the home stretching program provided by therapy was assisting him in better managing his symptoms overall. The focal thoracolumbar tenderness was resolved and range of motion, while still with limitations, was improved and painless on examination. The patient was instructed to complete course of physical therapy, continue with home stretches and exercises thereafter, and gradually increasing activities as tolerated.

**Discussion**

Although not fully understood, the most widely accepted theory explaining DISH, given the correlation with metabolic disorders, is a genetic predisposition in combination with mechanical stressors, which, in turn, cause the abnormal ossifications. Particular genetic markers and hormone levels are being isolated and studied, but there is currently no specific treatment of the underlying ossification process. Without a specific genetic marker, or other early identifier, it would be difficult to initiate medical therapy, given that most patients are asymptomatic or do not present with symptoms until the condition is already advanced and ossification centers have formed (Bakker et al., 2017; Belanger & Rowe, 2001; Kuperus et al., 2020; Le et al., 2021; Luo & Varacallo, 2021; Mader et al., 2018).

Currently, treatment focuses on symptom management, with most patients benefitting from physical therapy, home stretching and exercise programs, including yoga and Thai Chi, as well as oral and topical medications as needed. As there is no intervention for the ossification formation, surgery is typically reserved for secondary complications, that is, dysphagia and airway obstruction in relation to cervical disease, as well as unstable spinal fractures. The advanced practice provider must take into consideration the presence of DISH as it predisposes those patients to occult fractures, as well as potentially unstable spinal fractures, from even low-energy trauma. Careful attention should be paid to any ongoing patient complaints, with a low threshold for obtaining advanced imaging to identify osseous pathology (Bakker et al., 2017; Belanger & Rowe, 2001; Kuperus et al., 2020; Le et al., 2021; Luo & Varacallo, 2021).
REFERENCES


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