An Unexpected Finding in a Patient With Osteoarthritis

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By RheumatologyNetwork Staff

DISH, a radiographic finding characterized by abnormal calcification and ossification in the axial skeleton and in ligaments and entheses, most often affects the thoracic spine. Of note, the findings almost always are more prominent on the right side (the left side may be spared because of aortic pulsations). The enthesopathy, also called “whiskering,” can affect the pelvic brim, ischial tuberosities, greater trochanters, and other features that have ligamentous attachments. Diagnosis often is made after an incidental finding in an asymptomatic patient.

A 60-year-old woman with a history of osteoarthritis (OA) that involved both knees and the lumbosacral spine presented to the rheumatology clinic with a new complaint of worsening middle and upper back pain. She had no sensory complaints. Her past medical history was significant for obesity, depression, type 2 diabetes mellitus (DM), hypertension, and dyslipidemia.

The patient denied trauma to her back. She described her symptoms as constant pressure with occasional sharp pain and stiffness that improved during the day. The pain worsened with movement and with deep breathing. Pain medication was not helpful, but hot showers and moist heat lessened the symptoms.

Examination revealed no kyphosis or bony prominence. All the thoracic vertebrae were tender to palpation; there was only mild tenderness in the para-spinal area. There were no focal neurological deficits.

A thoracic spine radiograph was obtained and is shown above.

What is your diagnosis?

(Find the answer on the next page.)

The most prominent findings on this radiograph are the flowing excrescences seen on the right side of the spine between T5 and T12. The disk spaces are preserved. These findings are consistent with diffuse idiopathic skeletal hyperostosis (DISH). DISH, a radiographic finding characterized by abnormal calcification and ossification in the axial skeleton and in ligaments and entheses, most often affects the thoracic spine. Of note, the findings almost always are more prominent on the right side (the left side may be spared because of aortic pulsations). The enthesopathy, also called “whiskering,” can affect the pelvic brim, ischial tuberosities, greater trochanters, and other features that have ligamentous attachments. Diagnosis often is made after an incidental finding in an asymptomatic patient. DISH usually occurs in patients older than 50 years. The condition has a predilection for men (men to women ratio, at least 2:1).
The cause of DISH is unknown. The condition has been associated with numerous systemic disorders, including obesity, DM, hyperlipidemia, hypertension, and hyperuricemia. An association with the HLA-B8 allele also has been described. Diagnosis, as described by Resnick and Niwayama, is based on the following findings on plain x-ray films:

- Flowing calcification and ossification along the anterolateral aspect of at least 4 contiguous vertebral bodies.
- Preservation of intervertebral disk height in the involved vertebral segment and absence of extensive radiographic changes of degenerative disk disease.
- Absence of apophyseal joint bony ankylosis and sacroiliac joint erosion, sclerosis, or intra-articular osseous fusion.

The differential diagnosis includes OA and ankylosing spondylitis (AS). Both OA and DISH are diffuse arthropathies that can present with joint pain and stiffness. In contrast to DISH, OA usually presents with symptoms and often affects the knees, hips, and hands. Both conditions involve the axial spine, but DISH most often affects the thoracic spine; OA favors the lumbar and cervical spines.

Radiographic findings in OA almost always include joint-space narrowing and osteophytes; DISH, by definition, maintains joint spaces and has exuberant, flowing calcification and ossification between vertebrae, usually favoring the right side of the spine. Enthesopathy, often present in DISH, is not a feature of OA.

Like DISH, AS can present with back pain, stiffness, and dysmotility. The spinal calcification in AS is less exuberant, and in contrast to DISH, it directly abuts the vertebral bodies and disks and leads to ankylosis. AS usually presents in adolescence or young adulthood; the earliest symptoms appear in the sacroiliac joints. AS can cause significant disability and requires aggressive pharmacological therapy, usually with biologic response modifiers.

Advanced ankylosis in DISH may be associated with acute fractures, even with minor trauma, and in particular with hyperextension injuries. Fractures occur most frequently in the cervical spine, although the thoracic and lumbar spines also may be affected. Because these fractures may cause severe spinal cord injury and paralysis, a new onset of pain warrants radiographic evaluation even in the face of trivial injury. Fracture diagnosis is best achieved with CT; if spinal cord injury is suspected, an MRI scan should be obtained.

Management of DISH is supportive. Symptomatic patients may be treated with physical therapy, NSAIDs, local heat, and weight loss. Problems associated with the systemic diseases that coexist with DISH also must be managed aggressively.

The patient had many of the conditions associated with DISH, including obesity, DM, hypertension, and dyslipidemia, and these problems were managed appropriately. Her OA was managed with NSAIDs and physical therapy. She also lost weight, which improved her symptoms and her overall mood. Her middle back pain improved rapidly with gentle exercise, and it has not recurred.

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