Diffuse Idiopathic Skeletal Hyperostosis

Etiology and Pathogenesis

Diffuse idiopathic skeletal hyperostosis (DISH) is a diffuse ossifying condition of young dogs (predominantly large and giant breeds) or cats.[105,106] It has been suggested that four of the following five criteria be met for confirmation of DISH in dogs: (1) flowing calcification and ossification along ventral and lateral aspects of three contiguous vertebral bodies, leading to segmental bony ankylosis; (2) relative preservation of disk width in involved areas, and absence of extensive radiographic changes of degenerative disk disease (e.g., endplate sclerosis, nuclear calcification, or localized spondylosis deformans); (3) periarticular osteophytes surrounding true vertebral joints; (4) formation of pseudoarthrosis between the bases of spinous processes; and (5) periarticular osteophytes and calcification and ossification of soft tissue attachments (enthesiophytes) in both the axial and the peripheral skeleton.[105] Other associated findings may include periarticular osteophytes, sclerosis and ankylosis of sacroiliac joints, and bony ankylosis of the symphysis pubis.

The etiology of this condition is obscure. DISH is a disease that most likely represents a "vulnerable state" in which extensive vertebral ossification results from some stimulus that causes only modest new bone formation in most animals. These "bone formers" have a high incidence of associated extraspinal hyperostosis at the sites of ligament or tendon attachment. The pathologic alterations in DISH include findings consistent with spondylosis deformans; however, DISH differs quantitatively and qualitatively from spondylosis deformans and represents a regional ossification encompassing ligaments, paraspinal connective tissue, and anulus fibrosus, as well as periosteal new bone formation on the ventral surface of the vertebrae.[107-109] Spinal rigidity of several vertebrae resulting from DISH may result in syndromes caused by "dynamic overload" of an adjacent "mobile segment" of the vertebral column. Typically, a rigid fusion of several lumbar vertebrae may result in degenerative changes (e.g., sclerosis, spondylosis deformans, disk protrusion) that affect the "overloaded" disk immediately cranial to the fused segments. The degenerative changes in the adjacent disk may result in clinical signs associated with spinal cord compression or nerve root entrapment.

Clinical Findings

Clinical signs, which may be minimal compared with the dramatic radiographic changes, include mild apparent spinal pain, stiff or stilted gait, and difficulty jumping. Rarely, clinical signs of spinal cord compression resulting from extreme bony proliferation and spinal canal stenosis may result in a transverse myelopathy between T3 and S3. Nerve entrapment may result from bony proliferation at the level of the intervertebral foramen.

Diagnosis and Treatment

The diagnosis is based on radiographic confirmation of the diagnostic criteria listed above (Figure 193-5).[105] Analysis of CSF and myelography are necessary to rule out other disorders that may result in similar clinical signs. Advanced imaging (CT or MRI) may be useful for accurately investigating the possibility of spinal cord compression or nerve root entrapment resulting from bony proliferation.

Treatment for DISH has not been described. Conservative (medical) management is recommended unless clinical signs of spinal cord compression or nerve root entrapment are present, in which case surgical decompression may be considered.

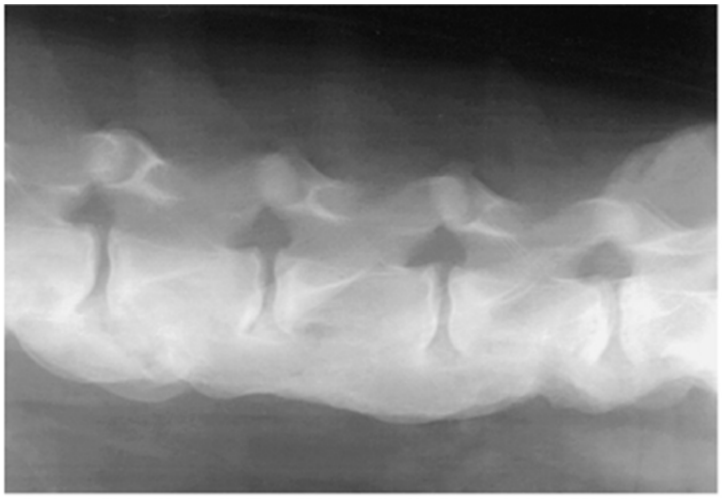

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Figure 193-5 Diffuse idiopathic skeletal hyperostosis (DISH). Lateral radiograph of the lumbar region of a 4-year-old neutered male Akita. Note the smooth proliferative laminar bridging of the ventral aspects of L4 through L7, consistent with a diagnosis of DISH. The intervertebral disks in this region do not appear to be narrowed. Spondylosis deformans is present at L7-S1. Proliferative remodeling changes are observed at multiple articular facets along the lumbar spine.