Vertebral Osteomyelitis in Diabetes Mellitus

Diabetic patients have a higher risk of infections such as urinary tract and lower extremity infections. Reports on vertebral osteomyelitis, however, have been limited in diabetic patients, although the number of reports have been increasing recently. Mucormycosis, malignant otitis externa, and Fournier’s gangrene are rarely associated with diabetes mellitus. Generally, host immune defense mechanisms are impaired in diabetic subjects. For example, phagocyticcapabilities of polymorphonuclear leukocytes (PMN) are worsened by hyperglycemia (1) in diabetic subjects (2, 3). However, a high risk for many infections in diabetes is not always supported by epidemiologic studies (4-6). Diabetic vascular diseases including microvascular dysfunction may result in imbalance of local microcirculation and may lead to susceptibility to infections (7). Diabetic neuropathy exposes the foot to frequent trauma and pressure sores, and the patient may be unaware of infection as it spreads into bone. Poor tissue perfusion impairs normal inflammatory responses and wound healing, and creates a milieu that is conductive to anaerobic infections.

Controversies have arisen (8) as new concepts resulting from medical innovations challenge traditional beliefs regarding the etiology and optimal treatment of pyogenic infectious spondylitis in children (commonly termed discitis). There are similarities between pyogenic infectious spondylitis in children and adults. Most patients with vertebral osteomyelitis complain of neck or back pain. Murao et al (9) reported a patient with pancreatic diabetes who developed typical discitis. The background of this diabetic patient who underwent a total pancreatic resection due to pancreatic cancer suggests sensitivity for intervertebral disk space infection and arthritis.

Clinical experiences support the management of vertebral osteomyelitis by parenteral antibiotics at all ages for symptomatic relief. Operative debridement is rarely needed. Postoperative discitis, including hematogenous vertebral osteomyelitis, requires primarily conservative care in the form of immobilization and parenteral antibiotics (10). The outcome of patients with vertebral osteomyelitis and secondary discitis in general is favorable when appropriate treatment is rendered.

Intervertebral disk space infection, common in children, has certain clinical and imaging characteristics (11). The diagnosis has largely depended on plain roentgenography. For the diagnosis of vertebral osteomyelitis the use of the cross-sectional imaging, including computed tomography and magnetic resonance imaging has been useful.

Over 95 percent of cases of hematogenous osteomyelitis are caused by a single organism. Staphylococcus aureus accounts for 50 percent of the isolates. Vertebral osteomyelitis is due to Escherichia coli and other enteric bacilli in approximately 25 percent of cases. Immunocompromised patients develop osteomyelitis caused by species of Candida, Cryptococcus, Aspergillus, or Pneumocystis. Assaad et al (12) reported a patient with acute neurologic compromise resulting from L5-S1 discitis and a large epidural soft tissue component secondary to the Aspergillus infection. The management and treatment of Aspergillus osteomyelitis of the vertebral body and disc space were reviewed briefly. The patient underwent aggressive surgical debridement along with treatment by amphotericin B and had a complete clinical recovery (12). Conclusively, a combined medical-surgical approach in most cases of vertebral Aspergillus osteomyelitis is recommended. Early surgery with vigorous surgical debridement along with antifungal treatment seems to yield a good outcome.

Usually, by the time the patient seeks medical attention, the ESR is elevated, and plain radiographs show irregular erosions in the end plates of adjacent vertebral bodies and narrowing of the intervening disk space. This radiographic pattern is virtually diagnostic of bacterial infection because tumors and other diseases of the spine rarely cross the disk space. As already described, computed tomography (CT) or magnetic resonance imaging (MRI) may demonstrate epidural, paraspinal, retropharyngeal, mediastinal, retroperitoneal, or psoas abscesses that originate in the spine.

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