



# POSNA

## The Core Curriculum

### Chronic osteomyelitis

#### Objectives

1. Describe the natural history of the evolution of acute to chronic osteomyelitis
2. Describe clinical and radiographic features of chronic osteomyelitis
3. Describe principles of management of children with chronic osteomyelitis
4. Describe the clinical and radiographic features of chronic recurrent multifocal osteomyelitis

#### Discussion

Although chronic osteomyelitis resulting from untreated acute osteomyelitis is no longer often seen in developed countries, it is still relatively common as a sequelae from open fractures or gunshot wounds. Principles of treatment for chronic osteomyelitis remain constant regardless of etiology. The classic form of chronic osteomyelitis had its onset with acute osteomyelitis, as the abscess was forming and the involved bone was ischemic. If the amount of ischemic bone was substantial, it would remain as a sequestrum. Especially if the sequestrum was contaminated, it would remain as a focus of recurring infection; even if not contaminated, its presence activated a host response similar to that of a foreign body - an attempt to wall off the sequestrum. The new bone reacting to the sequestrum is called the involucrum. Chronic osteomyelitis is clinically evident by low grade drainage and inflammation about the infected site. Pathologic fracture or nonunion may accompany chronic osteomyelitis. The quality of the adjacent soft tissue may be poor, depending on etiology. Treatment of chronic osteomyelitis in adults is sometimes compared to treating entities such as giant cell tumors, in that a radical resection of the infected bone is the first step, followed by efforts at reconstruction. The classification of Cierny is modeled on tumor classification.

The treatment of chronic osteomyelitis in children is somewhat easier in that the child's periosteum is capable of bone regeneration. The basic principle is the same, of eradicating the avascular bone, and providing a means for the limb to regenerate a replacement. If adequate soft tissue is locally available, the problem is less complicated. These principles have been nicely applied in the work of Daoud. Zahiri used a vascularized fibula with its musculature to replace the tibial defect when the bed was clean. Jain departed from conventional therapy, leaving the sequestra in place, immobilizing the limb accompanied by antibiotic therapy, with good results in children. A number of methods of management for chronic osteomyelitis have been described, usually with the goal of providing good quality soft tissue adjacent to the affected bone, flap coverage, antibiotic impregnated PMMA beads to assist in local control of infection, and the Papineau's open bone grafting technique. There is no single superior technique, the surgeon treating chronic osteomyelitis must be familiar with all methods and use what is available in the most creative way to achieve a successful result.

A completely separate entity to chronic osteomyelitis carries a similar name, but it has a noninfectious origin and does not respond to antibiotics - chronic recurrent multifocal osteomyelitis (CRMO). There is a female preponderance of patients with CRMO, the onset is usually in later childhood. The onset is characterized by systemic malaise and pain at the site(s) of bony involvement. The initial presentation may be unifocal, but characteristically there are sequential multifocal metaphyseal lesions, some resolving. Scintigraphy can reveal asymptomatic lesions. Some patients also suffer from palmoplantar pustulosis. Biopsy is diagnostic, but sophisticated histopathologic methods may be necessary. Antibiotics are contraindicated, nonsteroidals are currently recommended, and there is a case report of a very good response to interferon gamma.

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