

GENERAL PRINCIPLES OF ORTHOPAEDIC INFECTION

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Bone infection has all the elements of any inflammatory condition but bone produces some specific pathological features. Acute osteomyelitis occurs when pathogenic organisms cause infection, leading to inflammation in the bone and surrounding tissues. The medullary bone may form abscesses and pus may track through the cortex to form periosteal elevation and soft-tissue extension. This process will devascularise the cortical bone, causing bone death - the characteristic feature of chronic osteomyelitis. Bacteria can adhere to dead bone or implant surfaces, forming a complex community enveloped in a polysaccharide matrix, known as a biofilm. These bacteria alter their metabolic state, making them more resistant both to the host immune system and to antibiotics. Toxins and lytic enzymes cause damage to articular cartilage. From bacteria cause early Hans Christian Joachim Gram, 1853-1938, Professor of Medicine, Copenhagen, Denmark. dead fragments of bone (sequestration) and forming sinuses to drain pus and discharge small bone fragments. New bone is laid down around the infection from the periosteum (involucrum) (Figure 43.2). In septic arthritis, infection may follow direct ingress of bacteria after injury or surgery, or may result from discharge of an adjacent acute osteomyelitis into the joint. Particularly in neonates or the elderly, bacteraemia may infect a previously normal joint. Summary box 43.2 Pathology of bone infection /uni25CF /uni25CF /uni25CF

(a) (b) Figure 43.2 (a) Radiograph of chronic infection of the femur with a large central sequestrum and well-developed involucrum. (b) The sequestrum that was removed from the mid-femur at surgery. Bacteria infecting bone form a resistant biofilm on dead bone and implant surfaces. Infected bone dies and forms a sequestrum. The periosteum around lays down new bone - an involucrum.

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