

Multiple Myeloma

Multiple myeloma is considered the most common primary tumor of bone, accounting for approximately 45 per cent of all malignant bone tumors. It is usually seen in patients over 40 years of age and is two times more common in blacks than in whites. Radiographically, the multiple lytic lesions in myeloma are typically punched-out with fairly sharp margins but with no sclerotic response at the periphery and thus are often not picked up on a total body isotope study. The diagnosis is made by a combination of a bone marrow biopsy and a serum protein electrophoresis that reveals the elevated monoclonal immunoglobulin at either the alpha or gamma spike. Secondary to a light chain immunoglobulin spillover, Bence Jones protein will be picked up in a urine examination.

Three per cent of patients with myeloma have a sclerotic form (seen on radiographic examination) associated with a peripheral neuropathy. This type of multiple myeloma has a better prognosis for survival and is referred to as the Poems syndrome. Skeletal lesions are more typically seen in the spine and pelvic area and proximal long bones, but rarely seen distal to the elbow or knee. In aggressive forms of myeloma with extensive bony destruction by osteoclastic erosion, patients will develop hypercalcemia that can result in a semi-comatose state and is sometimes associated with nephrocalcinosis. Renal damage also results from excessive myeloma proteins plugging the renal tubules. Pathological fractures are common because of excessive osteoclastic activity (osteoclysis) that can be inhibited by drugs such as Aredia. Even though large concentrations of immunoglobulin are produced by the malignant plasma cells, the patient's resistance to infection is markedly inhibited and surgical complications resulting from infection should be anticipated when operating on patients with this disease.

Systemic chemotherapy has greatly improved the prognosis for survival in this disease. The drugs used include Melphalan and cortisone and have increased the survival chances to around three years. Local treatment consists of external beam radiation therapy and intramedullary devices, such as long stem prostheses and interlocking nails supplemented with bone cement, for pathological fractures. Excessive bleeding at the time of surgery is typical with myeloma patients, similar to the problem faced with patients with metastatic renal cell disease and thyroid carcinoma. It is important to irradiate the entire long bone involved when considering intramedullary device fixation because of the potential for newer lesions arising distal to the fixation device at a later date.

