suggests that multiple submicroscopic foci of metastatic disease are present at the time of diagnosis despite clinical evidence of localized involvement. The lungs, distant bones, and bone marrow are the most common sites for metastatic bone tumor disease. With current therapies that include surgery and chemotherapy for osteosarcoma and surgery, radiotherapy, and chemotherapy for Ewing sarcoma, the majority of patients with localized disease can be cured.

Osteosarcoma

Osteosarcoma (osteogenic sarcoma) presumably arises from bone-forming mesenchyme, which gives rise to malignant osteoid tissue. Most primary tumor sites are in the diaphyseal and metaphyseal region (wider part of the shaft, adjacent to the epiphyseal growth plate) of long bones, especially in the lower extremities. More than half occur in the femur, particularly the distal portion, with the rest involving the humerus, tibia, pelvis, jaw, and phalanges.

Therapeutic Management

Optimum treatment of osteosarcoma includes surgery and chemotherapy. The surgical approach consists of surgical biopsy followed by either limb salvage or amputation. To ensure local control, all gross and microscopic tumors must be resected. A limb salvage procedure has become the standard approach to surgical intervention and involves resection of the primary tumor with prosthetic replacement of the involved bone (Gorlick, Janeway, Marina, 2016). Frequently children undergoing a limb salvage procedure receive preoperative chemotherapy in an attempt to decrease the tumor size and make surgery more manageable (Arndt, Rose, Folpe, et al, 2012).

Chemotherapy plays a vital role in treatment of osteosarcoma. Antineoplastic drugs may be administered singly or in combination and may be employed both before and after surgical resection of the tumor. When pulmonary metastases are found, thoracotomy and chemotherapy have resulted in prolonged survival and potential cure. These combined-modality approaches have significantly improved the prognosis in osteosarcoma to approximately 75% for nonmetastatic patients (Arndt, Rose, Folpe, et al, 2012).