

History and examination

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It is important to take a thorough history, including a pain history. Non-mechanical and/or night pain, particularly in the young adolescent, is a concerning symptom and a primary bone tumour should be suspected. Relief with non-steroidal anti-inflammatory drugs may suggest an osteoid osteoma. Patients with a history of malignancy who present with back pain should be considered to have metastatic bone disease until proven otherwise. Plain radiographs of the spine and routine blood tests are the minimum that is required. An MRI of the spine is a more sensitive test for the detection of a malignant tumour and may demonstrate soft-tissue extension into the spinal canal. Multiple myeloma (Figure 42.3) is the most common primary malignancy of bone in adults and should be considered in all patients over 65 years of age with back pain. Back pain associated with an ESR >100 mm/h indicates multiple myeloma until proven otherwise. Monoclonal gammopathy or elevated urinary and serum Bence Jones proteins are diagnostic. All patients with suspected cancer in the spine should be examined for signs of spinal cord compression, a potential surgical emergency. Great care should be taken when managing a patient with an apparently 'solitary' bone metastasis. This could be a primary bone tumour, and further investigation including biopsy is required. Soft-tissue tumours are common and the vast majority are benign. However, a soft-tissue mass meeting any of the following criteria may be malignant and the patient should be referred to a specialist centre: painful; increasing in size; more than 5 cm in diameter. In addition, tumours that have recurred after previous excision and tumours located deep to the fascia are more likely to be malignant. It is important to note that tumours that appear mostly superficial but involve the deep fascia are classified as deep tumours. Henry Bence Jones, 1813–1873, physician, St George's Hospital, London, UK. The investigation of a patient with a suspected primary bone- or soft-tissue tumour should include the following.

Local investigations:

- ultrasound scan (for soft-tissue tumours);
- plain radiographs of the whole affected bone or soft-tissue lesion (Figure 42.1);
- MRI of the whole affected bone or soft-tissue mass;
- computed tomography (CT) scan may be helpful in addition to an MRI scan.

Distant:

- blood tests, including full blood count, ESR, urea and electrolytes, bone profile and protein electrophoresis;
- plain radiographs or CT scan of the chest (more sensitive);
- whole-body isotope bone scan (for suspected primary or metastatic bone tumours);
- ultrasound or CT scan of the abdomen (if renal metastasis is a possibility).

Plain radiographs are usually the most useful imaging investigations in determining the diagnosis of a primary bone tumour, but further appropriate scans are usually required for confirmation and staging. Imaging should always include the whole of the affected bone to look for satellite lesions and skip metastases. Satellite lesions occur within, whereas skip lesions occur beyond, the reactive zone of the tumour, which is the layer of compressed tissues, inflammatory cells and tumour infiltration that surrounds the tumour. Both primary bone and soft-tissue sarcomas metastasise to the lungs, and a CT scan of the chest is an essential part of staging. Patients who present with a lytic bone lesion could have a primary renal carcinoma and an ultrasound or CT scan of the abdomen is advised. Surgery to a

renal metastasis can lead to - significant blood loss. Summary box 42.9 Staging - /uni25CF /uni25CF /uni25CF -

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