FIGURE 397-3 Pigmented villonodular synovitis. MRI gradient echo sagittal image showing a mass that abuts the neck of the talus with marked low signal typical of tissue containing hemosiderin. *(Courtesy of Donald Flemming, MD; with permission.)*

motion of the joint. Radiographs may show several rounded calcifications within the joint cavity. Treatment is synovectomy; however, as in PVNS, the tumor may recur.

Synovial sarcoma is a malignant neoplasm often found near a large joint of both upper and lower extremities, being more common in the lower extremity. It seldom arises within the joint itself. Synovial sarcomas constitute 10% of soft tissue sarcomas. The tumor is believed to arise from primitive mesenchymal tissue that differentiates into epithelial cells and/or spindle cells. Small foci of calcification may be present in the tumor mass. Synovial sarcoma occurs most often in young adults and is more common in men. The tumor presents as a slowly growing deep-seated mass near a joint, without much pain. The area of the knee is the most common site, followed by the foot, ankle, elbow, and shoulder. Other primary sites include the buttocks, abdominal wall, retroperitoneum, and mediastinum. The tumor spreads along tissue planes. The most common site of visceral metastasis is the lung. The diagnosis is made by biopsy. Treatment consists of wide resection of the tumor, including adjacent muscle and regional lymph nodes, followed by chemotherapy and radiation therapy. Amputation of the involved distal extremity may be required. Chemotherapy may be beneficial in some patients with metastatic disease. Isolated sites of pulmonary metastasis can be surgically removed. The 5-year survival rate with treatment is variable and depends on the staging of the tumor, ranging from ~25% to ≥60%. Synovial sarcomas tend to recur locally and metastasize to regional lymph nodes, lungs, and skeleton.

In addition to the rare direct metastases of solid cell tumors to the highly vascular synovium, neoplasia arising from nonarticular organ sites can affect joints in other ways. Acute leukemias in children can mimic juvenile inflammatory arthritis with severe joint pain and fever. In adults, chronic and acute myeloid leukemia can infiltrate the synovium in rare instances. The rarely occurring hairy cell leukemia has a peculiar tendency to cause episodic inflammatory oligoarthritis and tenosynovitis; these episodes are dramatic and mimic acute gout attacks. They respond to potent anti-inflammatory therapy with glucocorticoids; with remission of the leukemia, they may abate. Carcinomas can be associated with several paraneoplastic articular syndromes, including HOA (discussed above). Acute palmar fasciitis with polyarthritis is a well-described but rare condition associated with certain cancers, mainly adenocarcinomas. Clinically, this syndrome is fairly abrupt in onset, with pain in the metacarpophalangeal and proximal interphalangeal joints of the hands and rapidly evolving contractures of the fingers due to thickening of the palmar (flexor) tendons. A similar syndrome can be seen in diabetics. Paraneoplastic arthritis has been described and may occur in several patterns: asymmetric disease predominantly affecting the lower extremity joints and symmetric polyarthritis with hand joint involvement. Tumors are often found after the onset of the arthritis, and many patients have a preceding period of malaise or weight loss. The onset is often acute, and patients tend to be older men. These features should raise the specter of an underlying malignancy (or a viral infection such as hepatitis C) as the cause of the arthritis. In one series, the symptoms resolved with successful therapy for the malignancy and did not recur with relapse of the malignancy. Dermatomyositis has a well-described association with neoplasms and may include joint pain and arthritis. Malignancy-associated arthritis may be responsive to NSAIDs and to treatment of the primary neoplasm.

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398 Periarticular Disorders of the Extremities

Carol A. Langford

A number of periarticular disorders have become increasingly common, due in part to greater participation in recreational sports by individuals of a wide range of ages. Periarticular disorders most commonly affect the knee or shoulder. With the exception of bursitis, hip pain is most often articular or is being referred from disease affecting another structure (Chap 393). This chapter discusses some of the more common periarticular disorders.

BURSITIS

Bursitis is inflammation of a bursa, which is a thin-walled sac lined with synovial tissue. The function of the bursa is to facilitate movement of tendons and muscles over bony prominences. Excessive frictional forces from overuse, trauma, systemic disease (e.g., rheumatoid arthritis, gout), or infection may cause bursitis. *Subacromial bursitis* (subdeltoid bursitis) is the most common form of bursitis. The subacromial bursa, which is contiguous with the subdeltoid bursa, is located between the undersurface of the acromion and the humeral head and is covered by the deltoid muscle. Bursitis is caused by repetitive overhead motion and often accompanies rotator cuff tendinitis. Another frequently encountered form is *trochanteric bursitis*, which involves the bursa around the insertion of the gluteus medius onto the greater trochanter of the femur. Patients experience pain over the lateral aspect of the hip and upper thigh and have tenderness over the posterior aspect of the greater trochanter. External rotation and resisted abduction of the hip elicit pain. *Olecranon bursitis* occurs over the posterior elbow, and when the area is acutely inflamed, infection or gout should be excluded by aspirating the bursa and performing a Gram stain and culture on the fluid as well as examining the fluid for urate crystals. *Achilles bursitis* involves the bursa located above the insertion of the tendon to the calcaneus and results from overuse and wearing tight shoes. *Retrocalcaneal bursitis* involves the bursa that is located between the calcaneus and posterior surface of the Achilles tendon. The pain is experienced at the back of the heel, and swelling appears on the medial and/or lateral side of the tendon. It occurs in association with spondyloarthritides, rheumatoid arthritis, gout, or trauma. *Ischial bursitis* affects the bursa separating the gluteus medius from the ischial tuberosity and develops from prolonged sitting and pivoting on hard surfaces. *Iliopsoas bursitis* affects the bursa that lies between the iliopsoas muscle and hip joint and is lateral to the femoral vessels. Pain is experienced over this area and is made worse