Magnetic resonance imaging in the diagnosis of PMR

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ABSTRACT

The cause of musculoskeletal symptoms in polymyalgia rheumatica (PMR) is not clearly defined because joint synovitis may only partially explain the diffuse discomfort. MRI imaging of the shoulders, hip and extremities of patients with PMR has been analyzed. MRI showed that subacromial and subdeltoid bursitis of the shoulders and iliopectineal bursitis and hip synovitis are the predominant and most frequently observed lesions in active PMR. The inflammation of the bursae associated with glenohumeral synovitis, bicipital tenosynovitis and hip synovitis may explain the diffuse discomfort and morning stiffness.

Polymyalgia rheumatica (PMR), a common disorder in elderly persons, is characterized by aches and morning stiffness in the neck, shoulders and pelvic girdle (1, 2, 5). In a recent study one or more episodes of distal extremity swelling with pitting edema in conjunction with the characteristic proximal symptoms seen in PMR have been reported (6).

The cause of musculoskeletal symptoms in the proximal extremities is not completely understood, even if joint synovitis has been revealed through scanning artroscopy, and synovial biopsy. Musculoskeletal discomfort of the proximal extremities can only be partially explained by this mild joint synovitis because in some patients symptoms in the distal extremities are caused by inflammation of the joints, the tenosynovial membrane, or both. Clinical evidence of peripheral synovitis was observed in 31-38% of patients who had PMR (7).

Magnetic resonance imaging (MRI) is at present the main diagnostic method to explore musculo-tendinous and articular structures (4). There are few published studies, however, that have examined the utility of MRI of the shoulders, hips and extremities of patients with PMR (10). Our MRI study shows that subacromial and subdeltoid bursitis is the predominant and most frequently observed lesion in patients with active PMR (Fig. 1). Inflammation of these two most frequently involved bursae is associated with synovitis of other joints and tenosynovitis of the extensor synovial sheaths together with subcutaneous and peritendineous edema of the dorsum of the hands and feet (pitting edema) (3, 4, 9) (Fig. 2).

MRI scanning of the shoulders and the hands is performed with a transmitted received superficial coil while a body coil is used to evaluate the hip regions. To explore the shoulder, the most useful technique includes oblique coronal T1 weighted sequences and axial T2 weighted images. For the examination of the joints T1 coronal scans and T2 weighted axial scans are employed. In magnetic resonance imaging of the hands, the "prayer position" is used with axial T2 weighted scans and sagittal T1 weighted images (6).

The MRI aspects observed in PMR are characterized by fluid accumulation in the bursae, joints and tendon sheaths, appearing as a mild hypointensity signal on T1 weighted scans and as a high in-

Fig. 1. Shoulder MRI in PMR (T2 weighted). Presence of abundant fluid within the subacromial/subdeltoid bursa.

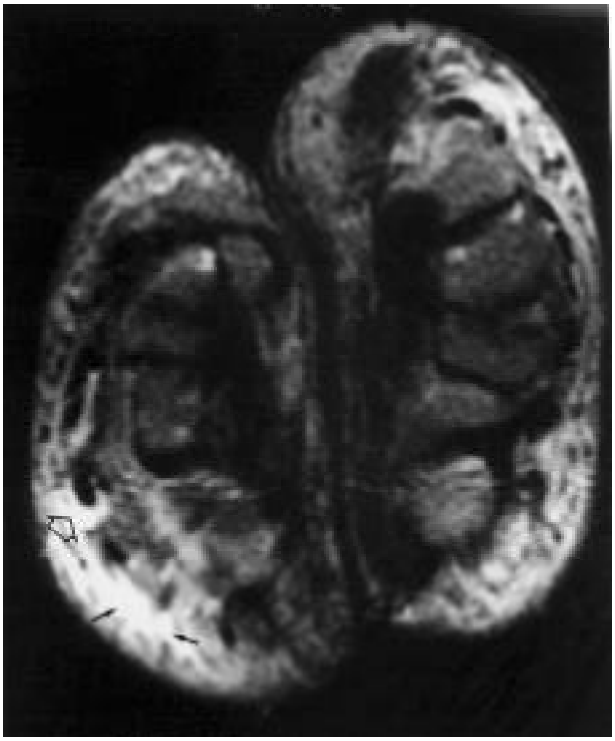

Fig. 2. Hand MRI in a patient with PMR and distal extremity swelling with pitting edema showing fluid within the soft tissues and the synovial sheaths of the extensor tendons.

tensity signal in T2 weighted images (8). Our study shows that bursitis is the predominant and most frequently observed lesion in patients with active PMR. In our experience no evidence of synovitis in the wrist and carpal joints was found. MRI revealed subcutaneous and peritendineous edema of the dorsum together with fluid accumulation in the extensor synovial sheaths.

Ultrasonography is the other method used to explore the joints involved in PMR. The method is simple, more widespread, repeatable, and less expensive than MRI and it shows good results in the examination of peripheral synovitis and distal swelling of the extremities. It has a lower sensitivity compared to MRI in the study of the glenohumeral and hip joints. It can show fluid collection in the subacromial and subdeltoid bursae and peritendineous fluid on the sheath of the long head biceps, but is less sensitive when the fluid is accumulated in the large joints.

Finally, MR imaging can be used to evaluate the modification of the lesions induced by corticosteroid therapy. A marked improvement of bursitis, synovitis and tenosynovitis is observed one week after injection with complete resolution of disease.

In some cases, despite clinical remission of the symptoms, MRI can show fluid persistence which suggests the disease is still active although asymptomatic.

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