Case report

Gallium-67 scintigraphy in polymyalgia rheumatica

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Received on March 27, 2006; accepted in revised form on December 5, 2006.

Clin Exp Rheumatol 2007; 25 (Suppl. 44): S34-S35.

Key words: Gallium scintigraphy, polymyalgia rheumatica, subacromial bursitis, subdeltoid bursitis.

ABSTRACT

A patient with atypical presentation of polymyalgia rheumatica is presented. Her major symptoms were mild weakness, pain on passive movement of the shoulder and hip girdles, with mild tenderness but no joint stiffness. Muscle enzymes were within the normal range. The diagnostic work-up included gallium-67 scintigraphy, which showed intense uptake in both shoulders, with remarkable improvement following steroid treatment. A prospective study may delineate the possible role of this imaging modality in establishing a diagnosis of polymyalgia rheumatica.

Introduction

The diagnosis of polymyalgia rheumatica (PMR) is based on a set of clinical features and laboratory evidence of inflammation. Different sets of diagnostic criteria have been suggested to aid in PMR diagnosis (1-4). Imaging modalities have not been frequently used to aid in the diagnosis of PMR, although recently it has been reported that bilateral shoulder bursitis and hip synovitis, detected by ultrasonography or MRI, may be diagnostic for PMR (5, 6). Gallium scintigraphy (Ga-67) has been applied to a variety of disorders, such as sarcoidosis. Ga-67 binds to several serum proteins and is taken up by neutrophils and macrophages, resulting in increased uptake in area of inflammation or infection. Therefore uptake may be increased in the shoulder area of patients with PMR. Surprisingly, searching the Medline using the terms polymyalgia rheumatica and gallium we found only one description of GA-67 imaging in PMR (7).

We present a case where Ga-67 scintigraphy helped establishing a diagnosis of PMR in a patient with atypical presentation.

Case report

A 79 year-old female was admitted due to functional deterioration of two-week duration, anorexia, inability to walk or stand, and mild bilateral hip and shoulder discomfort. There was no neck pain, and she denied any joint stiffness. On physical examination she was afebrile. There was mild weakness of both upper arms and lower limbs. There was very mild tenderness over the neck, shoulders, hips and thighs. Passive movement caused bilateral shoulder and hip pain, but she had full range of motion. Examination of other peripheral joints was unremarkable. No muscle fasciculations were observed.

Her laboratory evaluation showed elevated erythrocyte sedimentation rate of 139 mm/h (normal < 40). C-reactive protein (CRP) increased up to 10.6 mg/dl (normal < 0.5). Hemoglobin was 12 g/dl (normal 12-16). She had thrombocytosis of 774,000/μl (normal < 400,000). Creatine kinase and other muscle enzyme levels were normal. Rheumatoid factor was negative. Serum electrolytes, calcium and thyroid function were all within the normal range.

Radiography of the shoulders and hips did not show any significant abnormalities, and no chondrocalcinosis was seen. Ultrasonography of the shoulders excluded tendon tears, but showed bilateral gleno-humeral joint synovitis and bilateral subacromial bursitis. Computerized tomography of the cervical spine showed spondylosis, but there was no compression on the spinal cord or the nerve roots. Nerve conduction study showed mild bilateral median neuropathy, consistent with carpal tunnel syndrome. Electromyography study showed mild myopathic changes. Gallium scan (Ga-67 scintigraphy) showed markedly increased uptake in both shoulders and upper arms bilaterally (Fig. 1).

A presumptive diagnosis of PMR was made. The patient was treated with 20 mg/d of prednisone. A remarkable

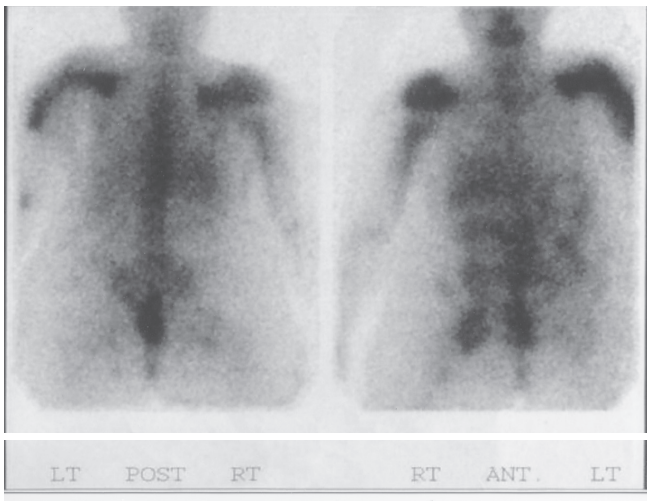

Fig. 1. Ga-67 uptake prior to steroid therapy.

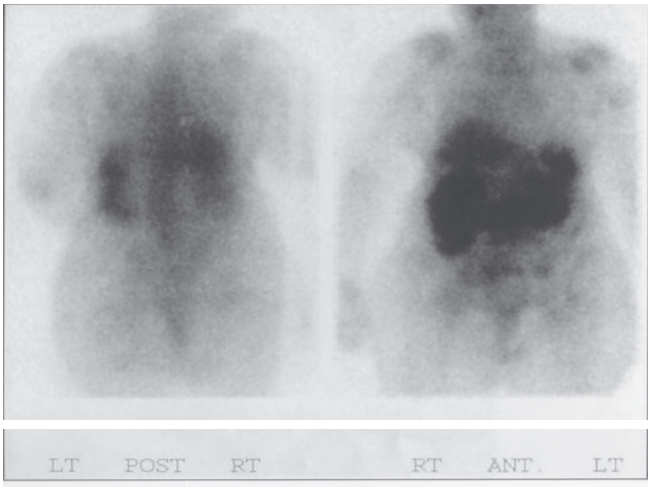

Fig. 2. Ga-67 uptake 2 weeks after initiation of 20 mg/d of prednisone.

improvement in her condition was noted within two days, with improved well-being, improved strength, and improved ability to walk. There was no pain with shoulder or hip movement. CRP decreased to 0.4 mg/dl within two weeks. A second gallium scan, two weeks after the initiation of steroid treatment, showed remarkable improvement (Fig. 2).

Despite the atypical presentation (no morning stiffness and only minimal shoulder and hip pain), the most likely diagnosis in this patient is PMR. This is based on the combination of bilateral shoulder bursitis-synovitis detected by ultrasonography (5), inflammatory markers on laboratory testing, and the rapid and complete response to 20 mg/d of prednisone.

Gonzalez-Gay *et al*. (8, 9) discussed conditions mimicking PMR, and suggested a diagnostic approach in patients presenting with features suggesting PMR. In our patient, other conditions such as myositis, thyroid disease, infectious diseases, malignancy, calcium pyrophosphate deposition disease (10), radiculopathies or brachial plexitis were ruled out with appropriate medical history, physical examination, laboratory, imaging and electrophysiological studies. In fact, this case fulfills the PMR diagnostic criteria suggested by Bird *et al*. (3) and by Healey (4). During a follow-up period of 6 months she continued to be asymptomatic and no other disease has emerged.

Given the strong inflammatory nature of PMR, it seemed likely that Ga-67 scintigraphy would detect increased uptake in the shoulders. However, following a Medline search using the terms polymyalgia rheumatica and gallium we found only one description of GA-67 imaging in PMR (7). In this case there was increased uptake in both shoulders and the buttock area, but there was no follow-up data after the initiation of steroid therapy.

The intense bilateral shoulder Ga-67 uptake, probably reflecting subacromial and subdeltoid bursitis, with normalization soon after the initiation of steroid therapy, added to the validity of the presumptive diagnosis of PMR in this case. A prospective study in PMR patients (and appropriate controls) may delineate the possible role of this imaging modality in establishing a diagnosis of PMR.

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