Sonoelastography can help in the localization of soft tissue damage in polymyalgia rheumatica (PMR)

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Sonoelastography is a recently developed ultrasound (US) technique that allows in vivo assessment of tissue mechanical properties (1). It measures the changes of tissue radiofrequency impulses before and after the application of gradual manual compression determining local deformation. The elastogram is visualized as a coloured image superimposed on the B-mode image where soft tissues are shown in red whereas hard tissues are shown in blue. This technique has been mainly used to investigate prostatic tumours (2), and breast masses, since carcinoma nodules are harder than fibroadenomas, which are harder than healthy breast tissue (3). To our knowledge, sonoelastography has not been used in the evaluation of musculo-skeletal conditions.

A 73-year-old man was first seen because of sudden onset of pain and stiffness associated with morning stiffness in his hip and shoulder girdles. ESR was 108 mm/h and CRP was 110 mg/dL. Ultrasonography of the shoulder showed a small effusion of the tendon sheath of the left biceps’ long head and degeneration of the supraspinatus tendon. This first operator, however, did not recognize enlargement of the subacromial bursa. This finding could be surprising because bilateral bursitis, evaluated by US or MRI, has a sensitivity of 92.9% and a specificity of 99.1% in differentiating PMR from other causes of shoulder pain (4). In spite of absence of bursitis, a diagnosis of PMR was made on clinical grounds, and the patient started treatment with 12.5 mg prednisone daily.

After one month’s therapy, improvement was absent with an ESR of 51 mm/h and CRP of 796 mg/dL. Ultrasonography of the shoulder showed a small effusion of the tendons of the left supraspinatus and subscapularis muscles, which are degenerated and enlarged supraspinatus tendon (3), the dishomogeneous area of the subacromial bursa (2), and the subcutaneous tissue (1). MRI, however, is more difficult to perform and more expensive than US, which is presently the reference imaging technique for several shoulder problems (6).

In summary, we have shown the first implementation of sonoelastography in rheumatology. We feel that sonoelastography could have additional applications in musculo-skeletal diseases. Areas of investigation in our centre, in addition to the evaluation of the shoulders of patients with PMR, are the differential diagnosis of nodules, such as tophi and rheumatoid nodules, the investigation of tendon mechanical properties, and the study of muscular diseases.

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References