Ultrasound-guided chronic musculoskeletal pain control

Ultrasound (US) evaluation of musculoskeletal illness has gained more popularity because of its increased portability, decreased cost, and advanced technology. In the past decades, the improvement of US machines in focused and real-time high-resolution imaging has facilitated the diagnosis of diseases in fine soft tissues such as tendons, ligaments, and nerve structures. Furthermore, high-frequency diagnostic ultrasonography has the capacity to improve the accuracy of diagnosis and management provided by neuromuscular, musculoskeletal (MSK), and interventional pain specialists.

In the early 1950s, US was used to screen musculoskeletal disorders. It was not until 1994 that color Doppler US for synovitis was first described. Common US findings for MSK injury are hypoechoic, hypervascular, calcific, and tissue-discontinuous findings. Ultrasonic elastography, which is an emerging set of imaging modalities that are utilized to image tissue elasticity, is effective for detecting and appraising different pathologies. In 1993, the first clinical report of elastography of soft tissue was published. Its usage is expanding, with applications including lesion detection and classification, fibrosis staging, treatment monitoring, and vascular imaging. More advanced development of US machines could result in a greater detection of lesions.

Chronic MSK pain conditions have multiple components, and physical, emotional, psychological, and social factors are often intercalated. Potential biomarkers in localized chronic myalgias are serotonin, glutamate, lactate, and pyruvate. Psychotherapy and biofeedback exercises can be used as nonpharmacologic therapies to manage chronic pain. Pharmacologic options are nonsteroidal anti-inflammatory drugs, weak opioids, selective tricyclic antidepressants, serotonin reuptake inhibitors, anticonvulsants, and topical medications such as lidocaine, diclofenac, and capsacin. Other management approaches include surgery and drug injections (e.g., local anesthetics, corticosteroids, sclerosing agents, hyaluronic acid, autologous blood, platelet-rich plasma, ozone, normal saline, and dextrose prolotherapy).

Corticosteroids are the most common drugs used for interventional chronic pain control because of their anti-inflammatory property, although they elicit no direct improvement on the functional aspects of the disorder being treated and the disability it causes. Platelet-rich plasma became popular in treating sports-related injuries because it mimics the repair processes. However, Reurink et al recently reported no benefits of using intramuscular platelet-rich plasma injections in comparison to a placebo in patients with acute muscle injuries. Numerous injected drugs show treatment efficacy; however, more high-quality randomized controlled trials are needed to optimize and define the role of injected therapies.

Ultrasound is a diagnostic choice and a therapeutic tool for guiding needle insertion and drug injection. It stands out as a good modality to assess upper limb diseases such as rotator cuff tear, calcific tendinopathy of the rotator cuff (RCCT), elbow epicondylitis, and de Quervain tenosynovitis. Using RCCT as an example, US-guided interventions have served as a nonoperative treatment and, at the 1-year follow up, resulted in improvements in patients who were unresponsive to conservative treatment.

In this issue of the Journal, Chiu et al wrote a comprehensive review article on chronic MSK pain of the limbs. They provided concise and clear information about complex MSK illness. Through their dedicated hard-work they have produced sonographic illustrations and showed great experience in handling MSK conditions. Readers can learn how to scan using the US probe, to show anatomic structures more easily by using their numerous exquisite images.

The causes of chronic MSK pain vary. Although multiple modalities exist to diagnose MSK, the treatment options could be more delicate and specific to each patient. In many ways, US is convenient and has advantages, and it promotes interventional therapies. Ultrasound-guided procedures present patients with a more valid and safer approach to chronic MSK pain management.

References


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