Clinical Application of Musculoskeletal Ultrasound (MSUS): How Can MSUS Aid in the Management of Gout?

Biography

Dr Carmen Tze-Kwan HO (FHKCP (HK), FHKAM (Med), FRCP (Edinburg, London)) is the Clinical Chief and Consultant of Division of Rheumatology and Clinical Immunology, Queen Mary Hospital. She is the Honorary Clinical Associate Professor, Li Ka Shing Faculty of Medicine, The University of Hong Kong. She is accredited with Level 2 certificate in Musculoskeletal ultrasound by European Alliance of Associations for Rheumatology (Eular) since 2013.

Carmen is the Chairman of the Specialty Board in Rheumatology, The Hong Kong College of Physicians.

Abstract

Gout is a common inflammatory arthritis induced by the deposition of monosodium urate (MSU) crystals in joins. Globally, gout takes the lead as the prevalent form of arthritis with research indicating an increase in cases in recent years. To manage gouty arthritis effectively, international guidelines advocate for an approach tailored to achieve specific outcomes for all patients with gout. The primary goal is to halt the formation of new MSU crystals and to eliminate the ones already deposited in the joint or surrounding tissues.

Musculoskeletal ultrasound (MSUS) is a non-invasive, free of ionizing radiation, easily accessible and inexpensive approach which has recently been widely used to identify MSU crystals depositions for diagnosing gout. The OMERACT ultrasound gout task force has published the consensus for the standardized ultrasound definition of lesions pertaining in gout. These lesions are double contour sign (DCS), aggregates, tophi and bony erosions with the consensus of sonographic definition as follows.

DCS (double contour sign):
It is abnormal hyperechoic band over the superficial margin of the articular hyaline cartilage, independent of the angle of insonation and which may be either irregular or regular, continuous or intermittent and can be distinguished from the cartilage interface sign.

Tophus independent of location (e.g. extra-articular/ intra-articular/intra-tendinous):
It is a circumscribed, inhomogeneous, hyperechoic and/or hypoechoic aggregation (which may or may not generate posterior acoustic shadow), which may be surrounded by a small anechoic rim.

Aggregates independent of location (intra-articular/ intra-tendinous):
They are defined as a heterogeneous hyperechoic foci that maintain their high degree of reflectivity, even when the gain setting is minimized or the insonation angle is changed and which occasionally may generate posterior acoustic shadow.

Erosion: an intra- and/or extra-articular discontinuity of the bone surface (visible in two perpendicular planes).

These findings are crucial in differentiating between gouty arthritis and other arthritis. For instance, crystal deposition arthritis such as pseudogout in which calcium pyrophosphate crystal (CPPD) is deposited in joints. In this presentation, the role of MSUS in managing gout is discussed in details.