DECT: A Novel Window in Gout Imaging

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A 37-year-old hypertensive and diabetic male was presented with polyarthritis and nodular soft swellings over multiple joints of upper and lower limbs along with podagra. The patient had a strong history of taking alcohol around 100 mL/day on a regular basis. He was being treated for rheumatoid arthritis in view of rheumatoid factor positivity with disease-modifying antirheumatic drugs without any significant relief and underwent right total knee and left total hip replacement. His anticitrullinated peptide antigen was negative. His X-ray of both hands and feet showed multiple deformities with erosions (Fig. 1). His ultrasound sonography on both hands and feet showed variable-sized echogenic soft tissue nodular deposits with internal calcific foci with posterior acoustic shadowing seen around elbows, wrist, knee, and dorsal surface of bilateral first metacarpophalangeal joints. His dual-energy computed tomography (DECT) of both hands and feet showed numerous large urate tophi (green) along the whole extent of feet, ankles, hands, and wrist (Figs 2 and 3).

Dual-energy computed tomography (DECT) is a new modality in the armamentarium of gout imaging which has witnessed a huge surge in its usage and availability. It is a noninvasive method of seeing monosodium urate (MSU) crystal deposits, especially in early gout. It works on the principle of differentiating material on individual absorption of X-rays at different photon energy levels (typically at 80 and 140 kVp).1

Data from a recent 40 patients study has determined its specificity of 0.83 [95% confidence interval (CI): 0.68–0.93] and the sensitivity to be 0.90 (95% CI: 0.76–0.97).2 Subclinical MSU deposits can also be detected in asymptomatic hyperuricemic patients.3 However, its use in follow-up of such patients is still questionable and it is important to locate true crystals and eliminate artifacts that are observer-dependent.

References

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