



Dual Energy CT (DECT) Gout

- Dr. Parang Sanghavi

Gout is a relatively common arthritis. When the findings are typical, the diagnosis can be reasonably easily made, however in many instances, the diagnosis is often delayed because the clinical presentation or joint involved is atypical and/or the serum uric acid levels are normal.

The gold standard is the demonstration of monosodium urate (MSU) crystals in the aspirated joint fluid. This is not always feasible or practical.

DECT (Fig. 1) overcomes these shortcomings by demonstrating MSU crystals non-invasively, using the dual energy analysis of materials.

Green is Gout – the urate crystals are typically coded with green colour for easy identification. DECT also helps with identification of MSU crystals in other asymptomatic areas (Fig. 1) and at atypical sites (Fig. 2).

A patient referred for DECT gout with lower limb symptoms is scanned across the knees, ankle and feet, while a patient with upper limb symptoms has a scan across the elbows, wrists and hands as well as the lower limbs.

DECT also helps with follow-up of patients to monitor response to treatment (Fig. 3).

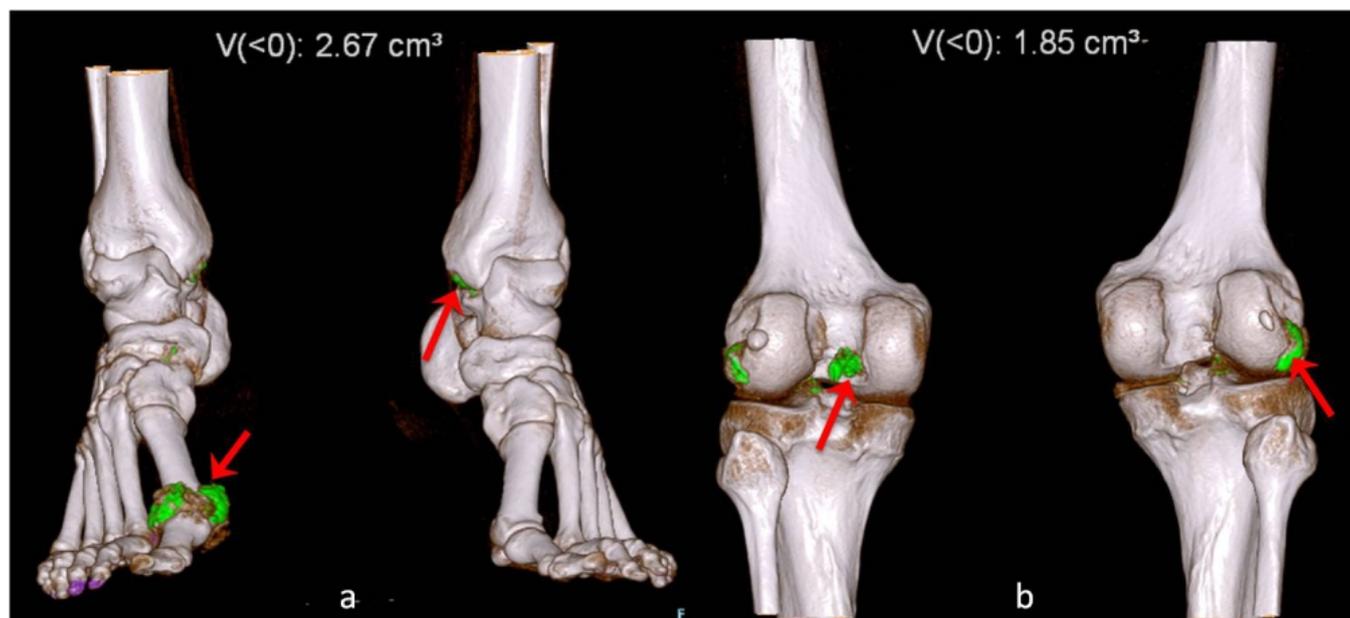
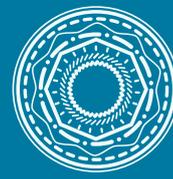


Fig 1 (a,b): A 42-years old man presented with pain and swelling around the right first metatarso-phalangeal joint. His serum uric acid levels were normal. DECT (a) shows green coloured MSU crystals (arrow) in the soft tissue around the right first metatarso-phalangeal joint, typical of gout. Note the presence of urate crystals (arrows) in the left ankle (a) and both knee joints (b) as well, for which the patient was asymptomatic. The total tophus volume is also shown..



At a glance:

- The gold standard for the diagnosis of gout is demonstrating MSU crystals in joint fluid, which is not always possible or practical.
- Dual energy CT (DECT) can demonstrate MSU crystals in and around the joints and hence can be used in atypical cases to make a diagnosis.
- DECT also helps with follow up to monitor treatment.

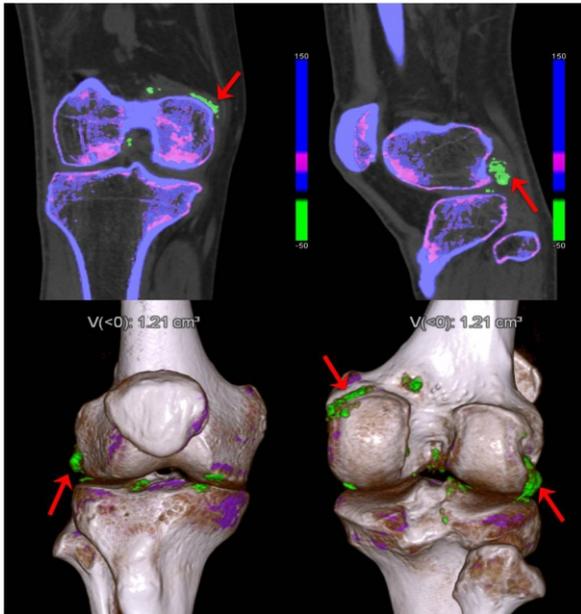


Fig 2: A 35-years old man presented with pain and swelling in the left knee joint for 4 months, clinically suspected to have a possible infective arthropathy. DECT shows extensive urate crystals deposition in the left knee joint, confirming the diagnosis of gout. The site is atypical and it would have been very difficult to make this diagnosis using routine tools.

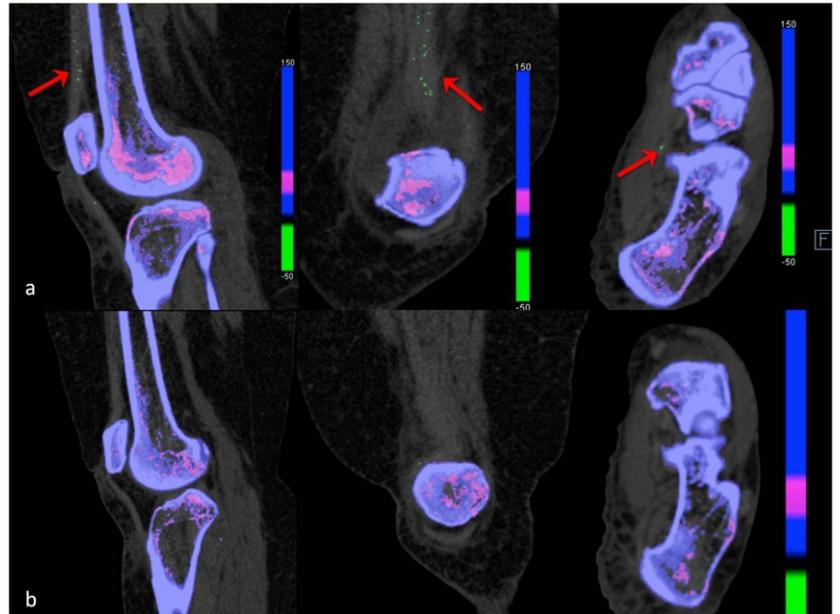


Fig 3 (a,b): A 55-years old woman, was diagnosed to have gout on DECT (arrows in row a). She came for a follow up scan after one and half months of treatment with allopurinol. The follow up scan (row b) shows significant improvement with near complete resolution of the urate crystals, suggestive of response to treatment.

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