

No More Blind Betting (With Ultrasound), When Rolling the Dice on Crystal Arthropathy!

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Emergency physicians routinely treat acute arthritis with anti-inflammatory medications and discharge patients with the diagnosis of gout. However, when patients return days later with worsening symptoms, the probability of it involving calcium pyrophosphate crystals requiring completely different management prevails.

Crystal misdiagnosis has its consequences. Research shows up to 40% of patients diagnosed with gout actually have pseudogout (calcium pyrophosphate crystal arthropathy) when properly analyzed.¹ This misidentification leads to treatment failure in over 60% of cases, with patients receiving colchicine for presumed gout when they actually need anti-inflammatory therapy for calcium pyrophosphate arthropathy.²

Musculoskeletal ultrasound (US) can help differentiate gout from pseudogout, though findings may overlap. Gout typically shows the double contour sign (hyperechoic rim over hyaline cartilage), tophi with posterior shadowing, and bone erosions with overhanging edges, commonly affecting the first metatarsophalangeal joint (Figure 1).³ Pseudogout characteristically demonstrates chondrocalcinosis as hyperechoic deposits in fibrocartilage like menisci and triangular fibrocartilage complex, with thicker, more irregular cartilage deposits than gout's double contour sign, typically affecting knees and wrists.³

While musculoskeletal US serves as a valuable first-line imaging tool, other advanced imaging modalities can provide additional diagnostic utility in complex cases. Magnetic resonance imaging offers detailed assessment of soft tissue and cartilage involvement, while dual-energy computed tomography can effectively detect crystal deposits and differentiate calcium pyrophosphate deposition disease from gout, particularly in challenging cases.⁴

Current protocols assume acute arthritis equals gout until proven otherwise, ignoring how crystal type determines treatment response. This assumption sets patients to prolonged disability when wrong treatments are prescribed for misidentified crystals.

The solution is an immediate “shot/attempt” at US crystal characterization rather than playing diagnostic roulette with patient health blindly. All in all, even when we are guessing, let's guess with US on our side.

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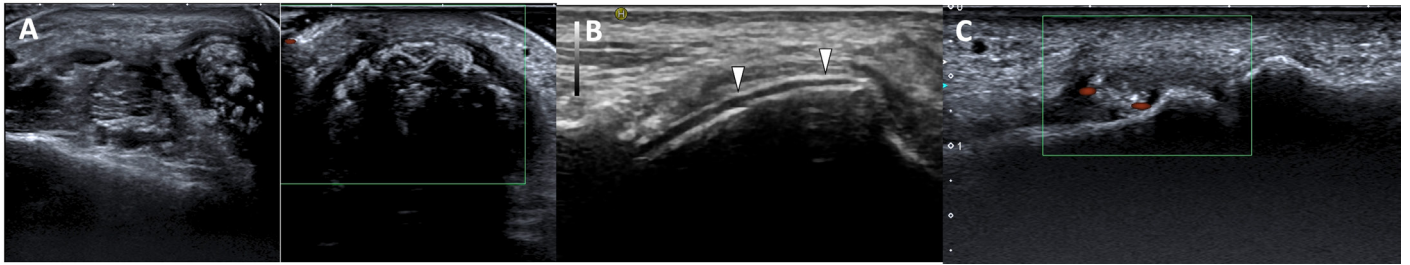


Figure 1. Combined grayscale and Power Doppler ultrasound showing subcutaneous tophus with heterogeneous echotexture and minimal internal vascularity (A). Grayscale ultrasound demonstrating “double contour sign” (white arrowheads) representing crystal deposition on cartilage surface (B). Power Doppler ultrasound of tophaceous lesion (green box) showing increased perilesional vascularity indicating active inflammation (C).

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