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An Interesting Image of Gout Crystals with Surrounding Tophi

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Title Page

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An Interesting Image of Gout Crystals with Surrounding Tophi

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Key Terms: Gout, crystal arthropathy, tophi, uric acid

Case Presentation:

The patient is a 72-year-old male with a history of mild von Willebrand's disease (35% activity) and prostate cancer. He awoke and the instant he stood up, he experienced excruciating pain along the lateral aspect of his first right toe. He was able to wear his shoes and go to work, but his symptoms remained and worsened over the next few days. He noted associated redness and swelling of his right first toe extending to the ankle. He had no other joint pain or swelling, no skin rash, visible areas tophi such as on ears, oral ulcers, or photosensitivity. He had no trauma, recent alcohol use, or dietary changes other than eating beef liver. His serum uric acid was 11.1 (2.6-7.2 mg/dl), complete blood count, and complete metabolic count were within normal range. He had similar findings in his left first toe several years prior and this was thought to be due to ill-fitting shoes, and it improved with orthotics.

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Joint aspiration of patient's right first metatarsophalangeal joint (MTP) was performed and showed slightly cloudy viscous fluid. The synovial fluid leukocyte count was 12,000 with a neutrophilic predominance and negative gram stain and culture. Joint aspiration was prepared as a wet mount (without need for pathological staining) to look under linear polarized light microscopy at a magnification of 200x. The diagnosis of gout was confirmed as monosodium urate (MSU) crystals were identified on polarized light microscopy as these crystals were needle-shaped and strongly negatively birefringent (Figure 1, black arrow). Aspiration of the joint also expressed whitish material consistent with tophi. This material was amorphous

granular debris with attached needle-shaped crystals on microscopy (figure 1, yellow arrow) consistent with tophi.

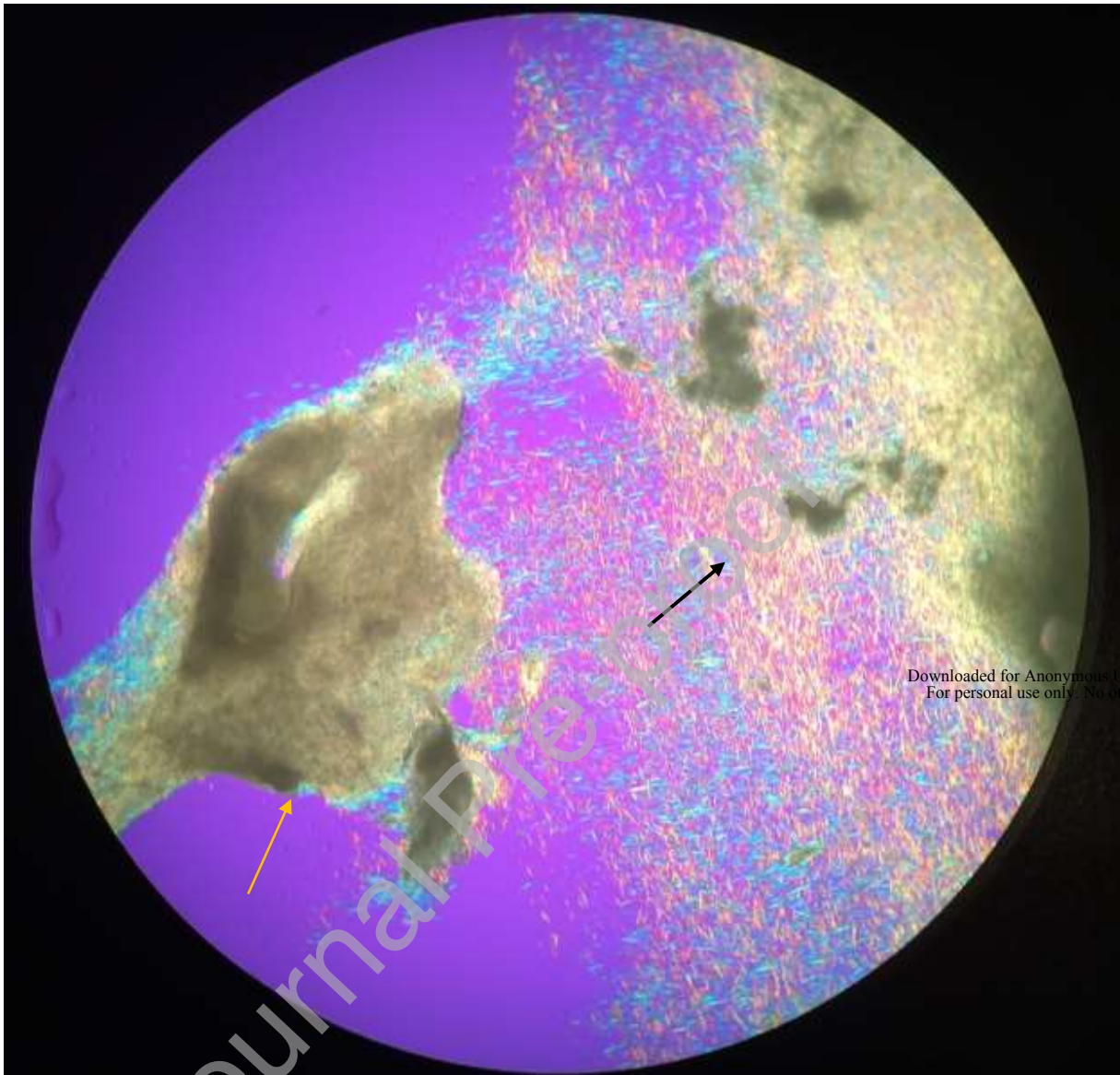
Gout is a common chronic inflammatory arthritis characterized by monosodium urate crystals deposition in synovial fluid. Hyperuricemia is the leading cause of gout with higher levels of serum urate leading to increased risk. Tophi are deposits of MSU crystals encompassing granulomatous inflammation that can contribute to joint damage and bone erosions. Under polarizing light microscopy, MSU crystals are seen as needle-shaped crystals with negative birefringence. The presence of MSU crystals in the joint fluid or tophus is the gold standard for the diagnosis of gout.

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Gout with tophi was diagnosed and the patient was started on colchicine and allopurinol with an improvement of his flare and reduction of his hyperuricemia.

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Figure 1