

## Gouty tophi of small joints of hand: A classical presentation

Manju Kumari<sup>1</sup>, Mukul Singh<sup>2</sup>

From <sup>1</sup>Senior resident, <sup>2</sup>Professor, Department of Pathology, V.M.M.C and Safdarjung Hospital, New Delhi, India.

**Correspondence to:** Dr. Manju Kumari, Department of Pathology, Flat No.45, United India Apartments, Mayur Vihar Phase-I Extension-110091, New Delhi, India. E-mail: manju.yadav126@gmail.com

Received - 09 June 2019

Initial Review - 30 June 2019

Accepted - 18 July 2019

### ABSTRACT

Gout is an acute inflammatory disorder caused by deposition of monosodium urate crystals. Gouty tophus can be the initial presenting feature of chronic disease. Diagnosis of periarticular nodules can be a challenge for clinicians. Fine needle aspiration can provide quick, cost-effective and definitive diagnosis for the early management of these patients. Here, we present the case of gouty tophi of the right-hand index finger in a 45-years-old male leading to restricted finger movements.

**Keywords:** Crystals, Fine needle aspiration cytology, Gouty tophus.

**G**out is a metabolic disorder characterized by an inflammatory response to the deposition of monosodium urate crystals secondary to hyperuricemia. The prevalence of gout in India is 0.12% with those with tophus on the finger are further very rare [1]. It is more common in males than in females. The hyperuricemia developed may be either due to increased production or decreased excretion of uric acid. Gout presents as acute painful episodes of the involved joint and as tophus. The tophi develop due to prolonged chronic hyperuricemia. However, with an advance in medical treatment availabilities for gout and good control of hyperuricemia, it is encountered rarely nowadays [2,3]. We present a classical case of gouty tophus diagnosed on cytology.

### CASE REPORT

A 45-years-male presented to the surgical outdoor patient department (OPD) with a complaint of diffuse swelling of the right middle finger with acute cruciating pain for the last one month. He had no other complaints and no significant past history.

On examination, the pulse rate was 78/min, blood pressure was 124/86 mm/Hg and respiratory rate was normal. Upon local examination, the swelling was involving the whole finger and few

yellowish nodules were present ranging in size from 0.1X 0.1 to 0.3X 0.3 cm<sup>2</sup>. The flexion and extension movements of the finger were restricted (Fig. 1). No specific clinical diagnosis/ differential diagnosis were given.

On a radiograph, there was a soft tissue swelling in the finger which was eroding the middle and distal phalanx of the finger (Fig. 2). Fine needle aspiration cytology (FNAC) was done which yielded chalky white material. Smears examination showed abundant granular amorphous material with stacks of slender needle-shaped crystals of monosodium urate (Fig. 3). Palliative surgery was done.

On histopathological examination, section showed aggregates of crystals of monosodium urate surrounded by inflammatory cells. A final diagnosis of gouty tophus was made (Fig. 4).

The patient was started on uric acid lowering drugs and diet management was advised. After 2 months of follow-up, he was having decreased swelling size and was responding well.

### DISCUSSION

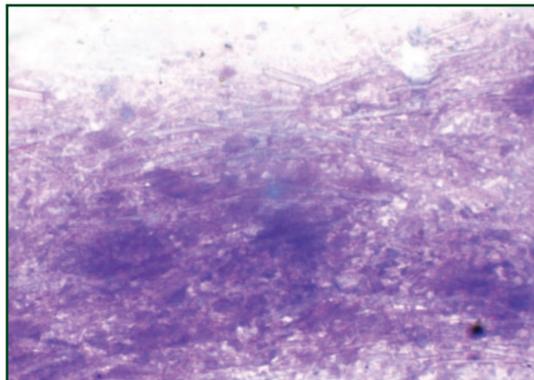
Periarticular nodules with arthritis can be a presentation of various diseases like ganglion, rheumatoid nodule, synovial chondromatosis, pigmented villonodular synovitis, and synovial



Figure 1: Radiograph AP/OBL of hand.



Figure 2: Clinical photograph of hand dorsal and ventral aspect

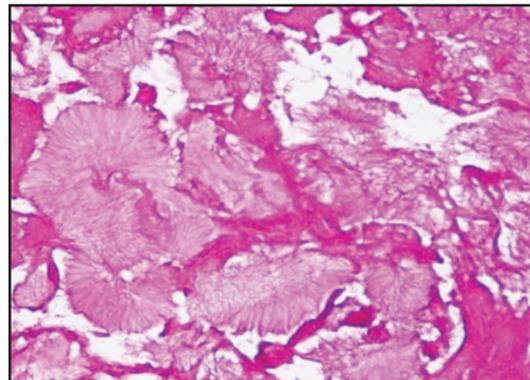


**Figure 3: Fine needle aspiration cytology showing needle shaped crystals (Giemsa, oil immersion)**

sarcoma. Gouty tophus is a painful condition diagnosed on clinical examination, FNAC or by serum levels of uric acid. Serum uric acid may be increased or normal at the time of presentation. So, serum uric acid levels can always not be very useful in diagnosis. Also, hyperuricemic patients can be asymptomatic, delaying the diagnosis of these patients. Radiological investigation includes X-ray which shows variable densities around the periarticular regions of 1<sup>st</sup> and 2<sup>nd</sup> metacarpal joints and mouse bitten bony erosions. But these changes are seen seven to eight years after the onset of disease. FNAC is a cost-effective, less painful OPD procedure leading to less tissue injury compared to biopsy.

Gouty tophus should be differentiated from pseudogout and tumoral calcinosis. Aspirate in gouty tophus is chalky white and on smears, there is a presence of slender needles-shaped crystals whereas the crystals in pseudogout are smaller, rhomboid in shape. The crystals in pseudogout are due to deposition of calcium pyrophosphate dihydrate (CPPD). Also, the gout crystals are negatively birefringent on polarized microscopy and CPPD crystals are weakly positive [4].

Cytology is superior over histopathology for the diagnosis of gouty tophus as the crystals are many times lost during processing in histology. Thus, an extensive search for crystals should be done when smears show granular aspirate [5]. This is commonly missed by inexperienced cytopathologists. FNAC is helpful in the diagnosis of clinically unsuspecting patients of gout and results in proper management. Treatment includes diet management that is an avoidance of alcohol, red meat, and seafoods along with uric



**Figure 4: Histological section showing needle shaped crystals (H & E, 200X)**

acid-lowering drugs. The decision of starting uric acid lowering depends on acute flare-ups per year, the status of serum uric acid, other comorbidities, available drugs and their side effects.

## CONCLUSION

The gouty tophi are on the rise in developing countries due to lack of proper management and diagnosis of these patients. FNAC is a less invasive and definitive diagnostic technique replacing biopsy for gouty tophus.

## REFERENCES

1. Thissen CA, Frank J, Lucker GP. Tophi as first clinical sign of gout. *Int J Dermatol.* 2008;47:49-51.
2. Chhana A, Dalbeth N. The gouty tophus: A review. *Curr Rheumatol Rep.* 2015;17:19.
3. Chopra A, Patil J, Billempelly V, Relwani J, Tandle HS. Prevalence of rheumatic diseases in rural population in western India: a WHO-ILAR COPCORD study. *J Assoc Physicians India.* 2001;49:240-6.
4. Bothale K, Mahore S. Cytodiagnosis of Gouty Arthritis. *J Clin Case Rep.* 2012;2:10.
5. Hanmante RD, Mulay PS, Kadam PN, Deshpande SA. Diagnostic utility of FNAC in gouty tophi with review of literature. *IAIM.* 2015;2:123-8.

*Funding: None; Conflict of Interest: None Stated.*

**How to cite this article:** Kumari M, Singh M. Gouty tophi of small joints of hand: a classical presentation. *Indian J Case Reports.* 2019; 10-Aug [Epub ahead of print].