

## Case Report


# Cytodiagnosis of Gout - A rare case report

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## Abstract

Fine Needle Aspiration Cytology (FNAC) is very valuable in diagnosis of a periarticular lesions and thereby confirming the nature of an associated arthritic process. Gout is a disorder of uric acid metabolism that causes deposition of monosodium urate crystals in the joint spaces. It often presents with painful joint effusion or swelling over toes. Radiological features may also be atypical and misleading. FNAC of gouty tophi is an easy alternative to synovial biopsy or fluid analysis since it is much less traumatic and simpler and thus should be encouraged in clinical practice. This case report of gouty tophi at the left knee is presented because of its rarity.

## Key words

Periarticular lesions, Gouty tophi, Fine Needle Aspiration Cytology.

## Introduction

Gout is a disorder of uric acid metabolism that causes deposition of monosodium urate crystals in the joint spaces. It often presents with painful joint effusion or swelling over toes. Gout may not be recognized as tophi because the clinical diagnosis of gout in many instances is not straightforward. In such a setting, Fine Needle Aspiration Cytology (FNAC) of gouty tophi would facilitate the clinical diagnosis and treatment. FNAC of gouty tophi is an easy alternative to synovial biopsy and joint fluid analysis. It is simpler, easier and less painful. As

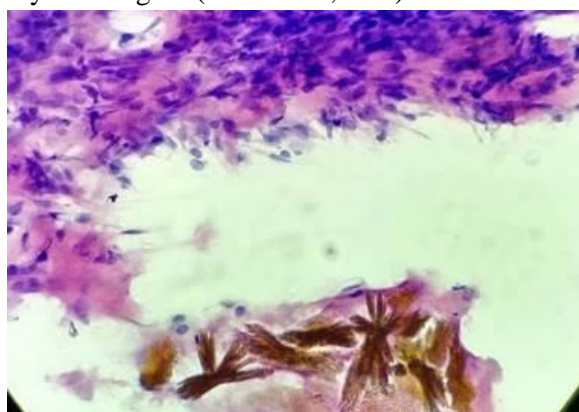
crystals are preserved in stained smears, they can be employed for polarization and confirmation of gout [1]. Here we have reported one case of a 42 years old male patient with knee swelling diagnosed as gouty tophi on FNAC.

## Case report

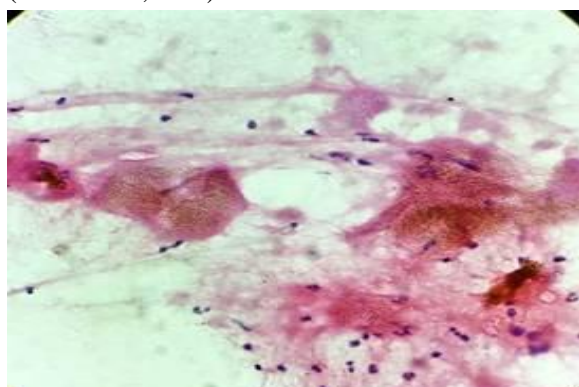
A 42-year-old male patient came to the Out-patient Department of Orthopedic department of Dhiraj General Hospital due to complaint of the swelling of the medial side of left knee since 6 months. The knee swelling was initially small in size and gradually increasing in size. On

presentation, patient had swelling at medial side of left knee measured 6.5×5 cm. On investigations, his hemogram, liver function tests, and rheumatoid factor were within the normal limits. But the uric acid level of the patient was raised which was 9.1 mg/dl. FNAC was advised by the clinicians and patient was referred to the cytology laboratory. FNAC was performed [2-15] from left knee swelling and thick chalky white material was aspirated. The smears were prepared, fixed with the methanol and air dried smears also made. The slides were stained with Hematoxylin and eosin stain. Microscopy revealed numerous needle-shaped crystals in stacks and dispersed singly with presence of neutrophils and granular amorphous material in the background. Flower-like arrangement of crystals was also seen (**Photo – 1, 2**). From overall cytomorphological findings a diagnosis of gouty tophi was established.

**Photograph – 1:** Flower-like arrangement of crystals of gout (H&E stain, 40X).



**Photograph – 2:** Amorphous eosinophilic material with plenty of needle shaped crystals (H&E stain, 40X).



## Discussion

Gout is characterized by disordered uric acid metabolism resulting in deposition in joint spaces of monosodium urate (MSU) crystals [16]. Chronic hyperuricemia in gout can be primary due to inborn errors of metabolism or secondary to acquired renal disease or conditions with extensive cell turnover [17]. Needle aspiration is very valuable in diagnosis of a periarticular lesions and thereby confirming the nature of an associated arthritic process [18]. Generally it progresses through four clinical stages if left untreated: asymptomatic hyperuricemia, acute gout, inter critical or interval gout and chronic tophaceous gout [19].

Periarticular masses pose diagnostic challenge both to clinicians and diagnosticians. Radiological features may also be atypical and misleading. FNAC of gouty tophi is an easy alternative to synovial biopsy or fluid analysis since it is much less traumatic and simpler and thus should be encouraged in clinical practice.

In most of the cases aspirate is chalky white. On microscopic examination there is presence of needle shaped crystals, amorphous or granular myxoid material with foamy histiocytes, multinucleated giant cell and acute or chronic inflammatory infiltrate [20, 21].

In differential diagnosis of there is possibility of tumoral calcinosis and tophaceous pseudogout [18]. In case of calcinosis cuties the calcium salts are intensely basophilic, amorphous calcified material on FNAC in contrast to the distinct, needle like crystals of gouty tophi. The calcium pyrophosphate dehydrate crystals of pseudogout are smaller, rhomboid or needle shaped and have weakly positive birefringence as opposed to MSU crystals, which are longer and needle shaped and have strongly negative birefringence [22, 23]. Thus demonstration of monosodium urate crystals in FNAC smears from nodular masses establishes the diagnosis of gout unequivocally.

At last we can say that FNAC is less invasive, simpler and cost effective technique for the diagnosis of gouty tophi as compared to the other diagnostic modalities.

### **Conclusion**

Fine needle aspiration cytology (FNAC) is becoming a popular clinical practice in diagnosis of soft tissue lesions, it is important for the pathologist to be aware of the microscopic findings and differential diagnosis of Gouty tophi.

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