



UNUSUAL PRESENTATION OF GOUTY TOPHI DIAGNOSED ON FNAC.

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ABSTRACT Periarticular and articular nodules can pose a diagnostic challenge to clinicians as well as pathologist and radiologist. It has many differentials from non-neoplastic to neoplastic disorders like rheumatoid nodules, ganglion cysts, pigmented villonodular synovitis, giant cell tumor of tendon sheath, metastases, synovial chondromatosis and synovial sarcoma. Gouty tophi are considered as one of the differential of these conditions. FNAC of these periarticular nodules is one of the diagnosing tools for gouty tophi on the basis of its characteristic cytomorphological features. Here we report clinical and cytological profile of two cases clinically suspicious of neoplastic process, where cytology was diagnostic of gouty tophi. The use of FNAC in periarticular and soft tissue nodules is highlighted.

KEYWORDS : Gout, Tophi, FNAC

INTRODUCTION

The first case was a 41 year old male who came to Surgery Out Patient Department with left foot swelling of one year duration which had been gradually increasing in size. There was history of recent trauma. Local examination revealed a swelling over lateral aspect of left foot measuring 3x3 cms. The overlying skin appeared tense and shiny without redness, and surrounding skin showed hyperpigmentation. Swelling was in subcutaneous plane, and not fixed to the skin or underlying tendon of flexor digiti minimi. The swelling was non tender, temperature was normal, non pitting on pressure, and slip sign was negative.



(Fig: 1): Clinical Photograph Showing Swelling Over Lateral Aspect of Left Foot.

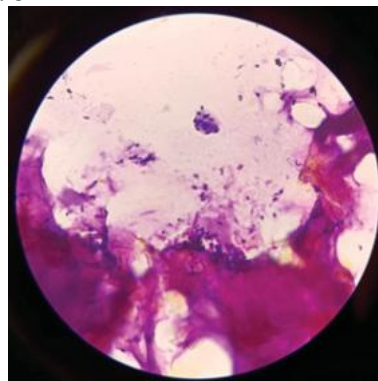
Patient had no systemic complaints. His complete hemogram, liver function tests, serum calcium and rheumatoid factor were within normal limits. Clinical radiograph of the left foot (anterio-posterior view) showed evidence of a soft tissue swelling overlying the fifth metatarsal bone. No obvious osteolytic lesions were noted.



(Fig: 2): Clinical Radiograph of Left Foot (AP View) Showing Soft Tissue Swelling Overlying Fifth Metatarsal Bone.

Clinical diagnosis of soft tissue tumor was given and patient was sent for FNAC.

The aspirate was chalky white amorphous material. Smears revealed amorphous material intermingled with which were histiocytes and few foreign body giant cells.



(Fig: 3): Microscopy Showing Amorphous Material Intermingled with Histiocytes and Foreign Body Giant Cells (H&E X40).

Polarizing microscopy of the stained smears revealed needle shaped birefringent crystals consistent with monosodium urate crystals of gout.



(Fig: 4): Polarising Microscopy Showing Needle Shaped Birefringent Crystals of Monosodium Urate (H&E X400).

Based on the above findings, diagnosis of gouty tophus was given. On further investigations patients uric acid levels were found to be 13.9 mg%.

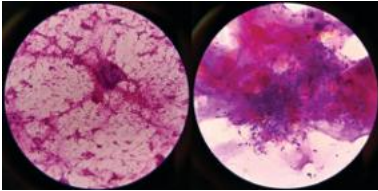
The second case was a 41 year old male who presented with bilateral elbow swelling since 4-5 years. He was chronic alcoholic since 20 years. Local examination revealed bilateral elbow swelling, measuring 3x2 cms. The overlying skin was stretched with superficial ulcers. There was no bleeding on touch. There were no signs of inflammation. Serum uric acid was 5 mg/dl.



(Fig: 5): Clinical Photograph Showing Bilateral Elbow Swelling

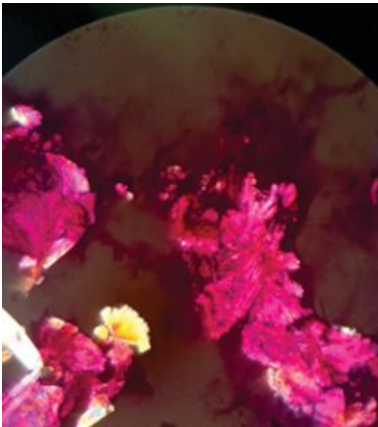
FNAC from the elbow swellings yielded whitish and granular material.

Smears revealed neutrophils, histiocytes and multinucleated giant cells in the background of abundant amorphous granular material. There were slender needle shaped crystals singly and in stacks.



(Fig: 6): Microscopy Showing Multinucleated Giant Cell (L) and Amorphous Granular Material Along with Neutrophils and Histiocytes (R) (H&E X100).

Polarizing microscopy of the stained smears demonstrated needle shaped birefringent crystals consistent with monosodium urate crystals of gout.



(Fig: 7): Polarising Microscopy Showing Needle Shaped Birefringent Crystals of Monosodium Urate (H&E X400).

Thus, a diagnosis of gouty tophus was rendered.

DISCUSSION

Gout is a chronic metabolic disorder characterised by hyperuricemia and deposition of monosodium urate crystals in joints and within periarticular soft tissues. The predisposing factors are heavy alcohol intake, overuse of diuretics and analgesics like acetylsalicylic acid, purine rich diet, obesity, hypertension, diabetes and renal compromise (1). In the second case, patient was chronic alcoholic which was one major risk factor.

Gout is caused by persistent chronic hyperuricemia, which may be primary or secondary. Primary hyperuricemia is the result of inborn

errors of purine metabolism or diminished renal excretion of uric acid. Secondary hyperuricemia is seen in systemic diseases like malignancies which have extensive cell turnover and acquired renal disease (2). Gout has four clinical stages: asymptomatic hyperuricemia, acute gout, intercritical gout and chronic tophaceous gout (1).

Tophi are periarticular soft tissue masses that develop after a long standing gouty arthritis, although they can develop without the concomitant arthritis (2).

The term "gout" was first used by Randolpbus of Bocking around 1200 A.D. Historically, it was referred to as "the king of diseases and the disease of the kings" or "rich man's disease". The first documentation of the disease is from Egypt in 2,600 B.C. in a description of arthritis of the big toe. In 1679, the microscopic appearance of urate crystals was first described by Dutch scientist Antonie Van Leeuwenhoek. In 1848, English physician Alfred Baring Garrod identified excess uric acid in the blood as the cause of gout (3). Iglesias et al coined the term "gout nodulosis" and is used to describe the subcutaneous deposits of monosodium urate crystals without gouty arthritis as first manifestation (4). It can also develop in patients with normal uric acid levels, particularly in diabetic and alcoholic patients. Soft tissue tophi can be mistaken for neoplasm clinically and radiologically (5).

FNAC has been under evaluation for the diagnosis of gout. On reviewing literature, we could find only six published reports of FNAC diagnosis of gouty tophi in indexed medical journals (2). FNAC is an easy alternative to synovial biopsy and joint fluid analysis in a case of gouty tophus (6). Whenever an aspiration yields amorphous or granular material, the cytopathologists should carefully search for characteristic crystals (7). These monosodium urate crystals are needle shaped rods about 5-20 micrometres in length with pointed tips. They are also strongly birefringent (8).

The differential diagnosis of crystalline tophus on cytology includes tumoral calcinosis (calcinosis cutis) and tophaceous pseudogout. Pseudogout is a rare entity which consists of deposition of calcium pyrophosphate dihydrate crystals in sites such as temporo-mandibular joint, fingers, toes, cervical spine, wrist, hip. The crystals are shorter, rhomboid shaped with blunt ends with weak birefringence on polarization and calcification on radiography. Tumoral calcinosis is an idiopathic condition presenting as swelling around the large joints such as hip, elbow, ankle and scapula. The calcified material in tumoral calcinosis is hydroxyapatite in nature and shows amorphous intensely basophilic granular appearance, but absence of crystals on cytology. Radiological calcification commonly seen in pseudogout and tumoral calcinosis is relatively rare in gout (1,2,9).

CONCLUSION

FNAC is a simple, rapid, reliable and cost-effective OPD procedure acting as an alternative to synovial biopsy and joint fluid analysis in elucidating the nature of periarticular nodules. It not only helps in diagnosing the cause or the nature of periarticular nodules but also excellently preserves the morphology of the crystals. FNAC is less invasive as compared to synovial biopsy which causes more tissue trauma. Crystal demonstration is superior in cytology smears rather than histopathology sections in which crystals are more commonly lost during processing.

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