Case Report

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Pathology Section

Cytological Diagnosis of Gouty Tophi in Two Cases with Different Clinical Presentation

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ABSTRACT

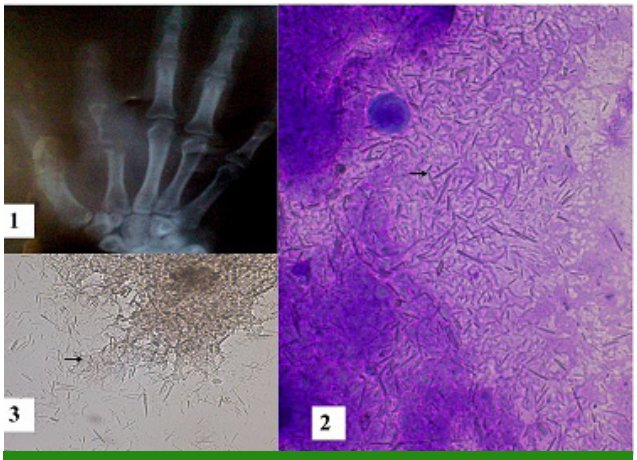
Gout is caused by persistent chronic hyperuricemia and is characterised clinically by relapsing and remitting attacks of joint pain. The deposition of monosodium urate crystals in and around joints, skin and soft tissue produces masses commonly referred to as tophi. Rare cases can present initially as tophaceous gout without features of arthritis. Below we report two cases clinically suspicious of neoplastic process; where cytology was diagnostic of gouty tophi. One of our cases presented as lytic lesion of bone without features of arthritis. The use of fine needle aspiration (FNA) cytology in periarticular and soft tissue nodules is highlighted.

Keywords: FNAC, Gout, Osteolytic lesion

CASE REPORT

Case 1: A 35 years old male who is a known case of Down's syndrome presented with swelling in the left index finger of six months duration. On examination tender swelling of 6x3 cm with a cystic feel was observed. The patient had features of Down syndrome along with tetrology of Fallot. X-ray of the hand was taken which showed multiple osteolytic lesions with involvement of the joint space [Table/Fig-1]. The radiologist thought of the possibilities of osteomyelitis, giant cell tumour, enchondroma and crystal arthropathy. FNAC did yielded whitish thick fluid material. Smears were acellular with aggregates and disassociated slender, needle-shaped crystals on unstained smears, Giemsa and Papanicolaou stained smears [Table/Fig-2]. No evidence of active inflammation or neoplasm seen. On seeing the morphology of the crystals we asked for the detailed blood investigations. The relevant positive findings were Hb-17 gm/dl, PCV-54 % and S. uric acid-11.8 mg/dl. No crystals were seen on urine microscopy. Correlating with the cardiac disease leading to secondary polycythemia, hyperuricemia and manifesting as crystal arthropathy; a diagnosis of gouty tophi was given.

Case 2: 46 years old male came with complaints multiple nodules over the left little finger, middle finger and thumb, and right elbow. To exclude neoplastic process FNAC was advised. Aspiration yielded thick whitish material. Cytology smears were similar to the case described above [Table/Fig-3]. Later we elicited the history of pain in multiple joints of 10 years duration and his serum uric acid levels were 6.2mg/dl. Based on the diagnostic criteria by American college of rheumatology a diagnosis of gout was made.



[Table/Fig-1]: X-ray picture of the hand showing multiple lytic lesions **[Table/Fig-2]:** Needle shaped crystals on giemsa stained smear (X400) **[Table/Fig-3]:** Wet mount smear of the aspirate showing needle shaped crystals (X 400)

DISCUSSION

Gout is a common cause of arthritis characterised by hyperuricemia and deposition of monosodium urate crystals in the periarticular soft tissue. Hyperuricemia can be primary or secondary. Primary hyperuricemia due to inborn errors of purine metabolism or overproduction of uric acid, dietary factors, unknown enzyme defects (in 80-90 % cases) and known enzyme defects like partial deficiency of HGPRTase. Secondary causes include conditions with extensive cell turnover or acquired renal disease [1-3].

The criteria for gout by American college of rheumatology include the presence of characteristic urate crystals in joint fluid, tophus containing urate crystals proved by chemical analysis or light polarised microscopy or six of the 12 clinical criteria. (Maximum inflammation within the first day, >1 attack of acute arthritis, monoarticular arthritis, redness over the joints, first metatarsophalangeal joint pain attack, unilateral metatarsophalangeal joint or tarsal joint attack, suspected tophus, hyperuricemia, asymmetric joint swelling or subcortical cysts on X- ray and negative bacterial culture of synovial fluid [3]. Hyperuricemia is the important risk factor for development of gout and tophi. But it can also develop in patients with normal serum uric acid levels; particularly in diabetic patients and alcoholics [4].

Diagnosis of gout can be difficult in cases presenting initially without arthritis or hyperurecemia [1, 2]. Differential diagnosis of periarticular swellings includes rheumatoid nodules, ganglion cysts, pigmented villonodular synovitis, tumoral calcinosis, synovial chondromatosis and synovial sarcoma [2]. Radiological findings may also be misleading as in our case. FNAC is an effective diagnostic tool yielding chalky white aspirate [1, 2, 4]. Smears show amorphous or granular material composed of fine needle shaped crystals which are negatively birefringent under polarised microscope. Due to the unavailability of polarising microscope we couldn't demonstrate the negative birefringence. Other causes of arthritis, crystal arthropathies and tumoral calcinosis have to be considered in the differential diagnosis of cytology smears [1]. Crystal deposition disease, calcium pyrophosphate dehydrate (CPPD) or pseudo gout usually occurs in joints previously affected by osteoarthritis or after injury. Common sites affected are the knee, base of the thumb, or shoulder. X-ray shows a line of calcification along the cartilage outlining the joint. The CPPD crystals are calcified, rhomboid, with blunted or squared ends and under polarising microscope show weak positive birefringence [1-3,5,6]. Amorphous calcified noncrystaline material is aspirated in tumoral calcinosis.

CONCLUSION

Synovial fluid aspiration is the gold standard for diagnosis of gout, but FNAC is another effective diagnostic tool, particularly in cases where tophi is the initial presentation [4]. Crystals are better demonstrated on cytology smears and other crystals in the synovial fluid that mimic MSU are also avoided [1,2,5,6]. It also excludes the differential diagnosis of neoplasms in soft tissue swellings

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