



**ORIGINAL RESEARCH PAPER**

**Pathology**

**MYELOID SARCOMA OF THYROID GLAND- A RARE ENTITY DIAGNOSED BY FNAC.**

**KEY WORDS:** Chronic Myeloid leukemia, Fine needle aspiration cytology, Myeloid sarcoma, thyroid,

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**ABSTRACT**

Myeloid sarcoma, also known as extramedullary myeloid tumor, is a tumor mass composed of myeloblasts or immature myeloid cells occurring in extramedullary site or in the bone. Myeloid Sarcoma (MS) can occur in many parts of the body commonest being lymph nodes, bone, skin, soft tissues but its occurrence in thyroid is very rare which prompted us to report this case. Here in we report an unusual case of MS of the thyroid in a 50 year old lady diagnosed by FNAC. She presented with chief complaints of fever, weakness, abdominal pain since last 3 months. Concurrent hematological examination diagnosed the patient to have CML in chronic phase. This case emphasizes FNAC as the easy, rapid, and cost-effective method to diagnose MS. It also deals with cytomorphological features of MS, along with brief literature review and its differential diagnosis.

**INTRODUCTION:**

Myeloid Sarcoma is an uncommon tumor with difficult clinical and morphological recognition. It has varied synonyms. MS also called as granulocytic sarcoma, intramedullary myeloblastoma or chloroma. It is predominantly composed of immature cells of granulocytic series [1]. It is usually associated with acute myeloid leukemia (AML), but can be found with chronic myeloid leukemia (CML) or other myeloproliferative disorders. It can be seen before, concurrent or after the onset of myelogenous leukemia or other myeloproliferative disorder. Granulocytic sarcoma sometimes may be the initial manifestation of leukemia although its occurrence is very rare.

MS can be seen in varied sites resulting in a single tumor or sometimes multiple nodular masses, commonest being lymph nodes, bones, soft tissues and skin [2]. It may also present as a serous effusion. Subperiosteal bone structures of skull, paranasal sinuses, sternum, vertebra and pelvis are also other sites of bone involvement. Other rare sites reported in literatures includes pancreas, heart, brain, mouth, breast, G.I.T. Fine needle aspiration cytology (FNAC) can diagnose myeloid sarcoma easily with accuracy without resorting to open biopsies [3,4]. We present a case of myeloid sarcoma of thyroid gland which was confirmed by routine peripheral smear examination done at the same time that revealed CML in chronic phase.

**CASE REPORT:**

A 54-year-old female presented with complaint of severe weakness, fatigue, loss of appetite and loss of weight and pain abdomen on and off over a period of 3 months to medicine OPD. On general examination she had pallor. There was no icterus, cyanosis, clubbing, and/or lymphadenopathy. Massive splenomegaly was present. There was no hepatomegaly. She also had a thyroid swelling which was detected incidentally at the time of examination. She was then referred to the Department of Pathology for fine needle aspiration (FNAC). On examination, there was a diffuse swelling over the anterior part of the neck measuring 5 cm x 4 cm. Swellings were firm in consistency, mobility was restricted but the patient couldn't tell the exact duration of the swelling. The smears showed few clusters of thyroid follicular cells, plenty of neutrophils admixed with immature myeloid precursor cells with abundant eosinophilic cytoplasm with large nuclei (myeloblast). There were many scattered metamyelocytes. Although MSs are cytologically variable, most often they are composed of medium-sized to large blastic cells with ovoid vesicular nuclei with medium-sized or large centrally located nucleoli and dispersed chromatin. Their cytoplasm is scant to moderate. The FNA report was suggestive of myeloid sarcoma. At the same time, routine hematological investigations done revealed hemoglobin of 9.1 g/dl. Total leukocyte count was markedly increased (150,000 cells/cmm) with

differential count of myeloblasts-6%, myelocytes-15%, promyelocytes-4%, metamyelocytes-7%, band forms and neutrophils-38%, lymphocytes-2, monocytes-1, eosinophils-5%, and basophils-22%. Platelets were slightly reduced (1.0 lakhs/cmm). The peripheral smear was reported as CML—chronic phase. BM aspiration was done which further confirmed our diagnosis. The patient was referred to the cancer institute for chemotherapy. She was put on imatinib therapy. She is under regular follow-up and presently without any complaint.

**DISCUSSION:**

Myeloid sarcoma was first described in the year 1812. [5] MS, also known as extramedullary myeloid tumor, is a tumor mass composed of myeloblasts or immature myeloid cells occurring in an extramedullary site or in bone [1]. It is also termed as chloroma because of its green appearance on gross morphology. [5] This green appearance is due to the content of myeloperoxidase enzymes in the myeloblasts. [5].

MS may be found in one of the four settings – (a) in patients with known AML in the active phase of the disease; (b) in patients with chronic myeloproliferative disorder (CMPD) or myelodysplastic syndrome, in whom MS may be the first manifestation of blastic transformation; (c) as he first manifestation of relapse in previously treated patients of primary or secondary acute leukemia; (d) de novo in healthy individuals [6,7]. Rarely these tumours present with no evidence of leukemia on peripheral blood or bone marrow studies. Most commonly myeloid sarcoma is associated with AML. [8] Association of myeloid sarcoma with CML in chronic phase is relatively rare. It's association with CMPD has a poor prognosis as these tumours often occur during acute transformation [9]. In our case diagnosis of myeloid sarcoma of thyroid and CML was concomitant. Such an association is unusual which prompted us to report this case.

It is easy to establish a diagnosis of MS in patients with known hematological disorders like AML, CMPD, or MDS, but diagnosis is often missed out in patients with no clinical suspicion of leukemia or in a previously healthy individual. The differential diagnosis that needs to be taken into consideration are Malignant lymphomas (NHL and HL), infections, poorly differentiated carcinoma and other non lymphoid small round cell tumor. Non-Hodgkin lymphoma and poorly differentiated carcinoma may be considered in the differential diagnosis of myeloid sarcoma if there are predominantly blasts. For myeloid sarcoma showing more mature forms, extramedullary hematopoiesis and infection may be considered. In extramedullary hematopoiesis, in addition to the mature and immature form of myeloid series cells, erythroid series and megakaryocytic series cells also can be seen, and in cases of infection apart from relevant history, there will be more number of neutrophils and some may show the presence of toxic granules [4, 10].

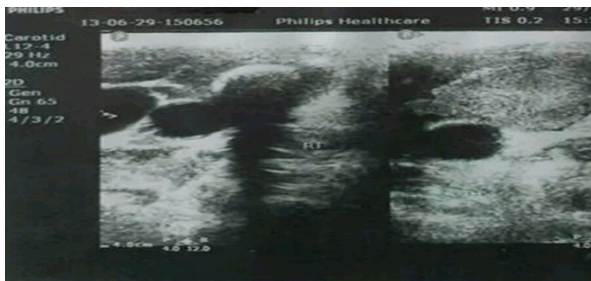
Myeloid sarcoma can further be classified based on the predominant cell type and according to cell maturation. Thus, it can be subclassified as granulocytic, monoblastic, or myelomonocytic type or into immature, mature, and blastic types.[11].

**CONCLUSION:**

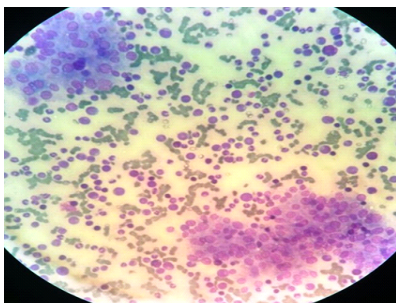
Isolated myeloid sarcoma diagnosis is a challenge both clinically and microscopically. It has unique cytological features which can be readily identified on FNAC smear in the absence of peripheral or bone marrow smears. However in our case FNAC findings in conjunct with the peripheral smear findings confirmed the diagnosis of Myeloid Sarcoma of thyroid. FNA is a cost-effective method and can provide rapid diagnosis particularly in accessible lesions. We present this unusual case of myeloid sarcoma diagnosed by FNAC emphasizing the importance of FNAC.



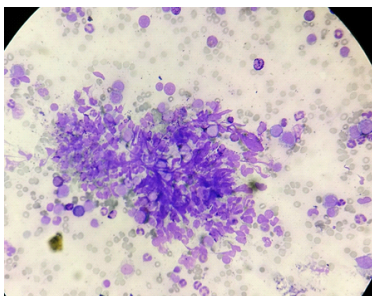
**Fig 1- Clinical pic of patient showing diffuse thyroid swelling.**



**Fig2- USG of thyroid lobes**

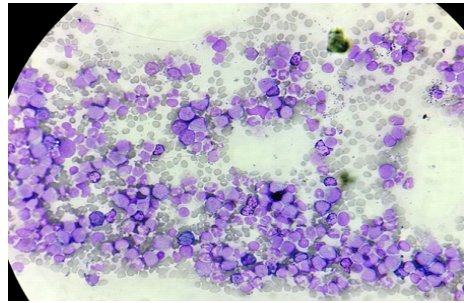


**Fig 3(a)**

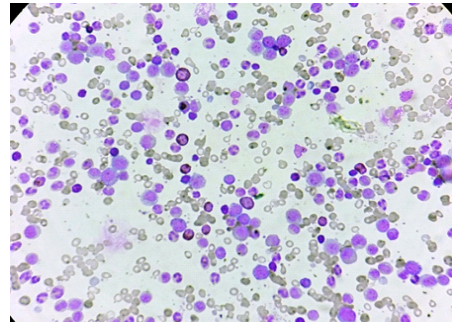


**Fig 3 (b)**

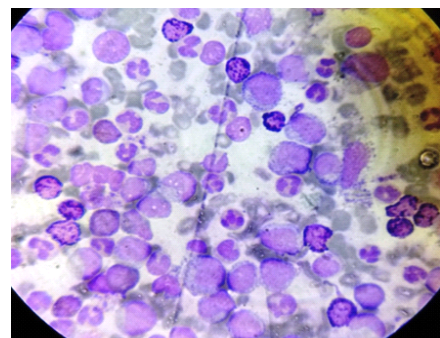
**Fig 3(a) and 3(b) -Showing thyroid follicular cells admixed with immature myeloid cells**



**Fig 3(c) HP 400X-FNAC Showing immature myeloid cells at the periphery.**



**Fig 5 (a) LP 100X-Peripheral smear**



**Fig 5 (b) 1000x-Peripheral smear showing CML-Chronic phase**

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