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# Breast Plasmacytoma: Multiple Myeloma Comes Back

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**Abstract:** Extramedullary plasmacytomas are malignant proliferations of plasma cells outside the skeletal tissue. They commonly involve upper respiratory tract and oral cavity. Extramedullary plasmacytomas involving the breast are very uncommon. Here we present a report of extramedullary plasmacytoma of breast in a 53 year old multiple myeloma patient. FNAC and trucut biopsy helped in accurately diagnosing as plasmacytoma of breast.
**Keywords:** Extramedullary plasmacytoma, Breast plasmacytoma, FNAC, Trucut biopsy, Differential diagnosis, Management.

## INTRODUCTION

Multiple myeloma is a monoclonal, immunoproliferative plasma cell neoplasm of the B lymphoid cells [1]. It is disseminated neoplasm characterized by clonal proliferation of plasma cells in bone marrow [2]. Multiple myeloma may also involve extraosseous i.e. extramedullary sites [3]. Extramedullary plasmacyotmas are plasma cell neoplasms that can present as primary tumor or as secondary involvement in multiple myeloma [4]. Secondary extramedullary plasmacytoma is usually noted in advanced stages of multiple myeloma with breast involvement being very rare. Most reports indicate that extramedullary plasmacytoma commonly involve the upper respiratory tract and oral cavity [1]. Here we report a rare case of extramedullary plasmacytoma of breast.

## CASE REPORT

A 53 year old post menopausal woman presented with left breast mass of one month duration. On examination the breast mass was 5X4.5 cms, firm in consistency, mobile, non tender on palpation. Fine needle aspiration of breast lump was done. Fine needle aspiraton cytology was positive for atypical cells (Fig. 1a and Fig. 1b), the possibilities considered were duct cell carcinoma or plasma cell neoplasm , as she was a known case of multiple myeloma on irregular treatment.

Bone marrow aspiration and biopsy revealed a hypocellular marrow.

Trucut biopsy on the breast lump was done. We received 2 linear gray-white to gray-brown linear soft tissue bits, measuring 2cms each. On histopathological examination, sections showed fragmented linear tissue with sheets of cells having plasmacytoid appearance with eccentrically placed nucleus and moderate amount of eosinophilic cytoplasm (Fig. 2a). Few binucleate, multinucleated cells were also seen (Fig. 2b).

Immunohistochemistry studies were performed on the trucut biopsy tissue. IHC staining was done for pancytokeratin, CD 138 and CD56. The sections were negative for pancytokeratin and CD56 but showed membrane postitivity for CD138 (Fig. 3a, 3b, 3c, 3d).

Trucut biopsy section features and positivity for CD138 staining on IHC lead to a final diagnosis of plasma cell neoplasm- extramedullary recurrence in a known case of Multiple myeloma.

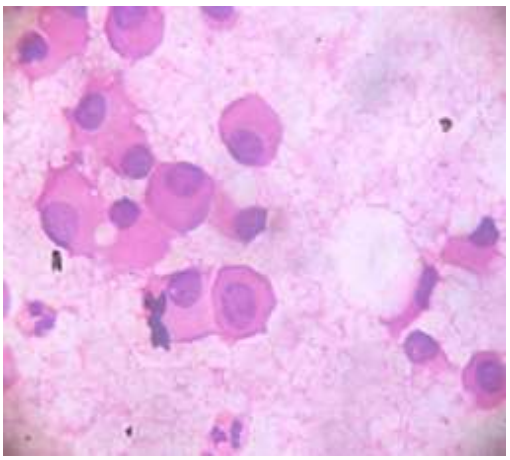

**Fig. 1a: Cytosmear showing atypical plasmacytoid cells (high power)**

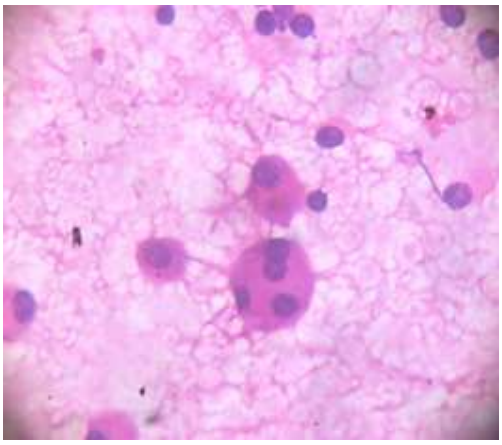

**Fig. 1b: Cytosmear with multinucleate cells (high power)**

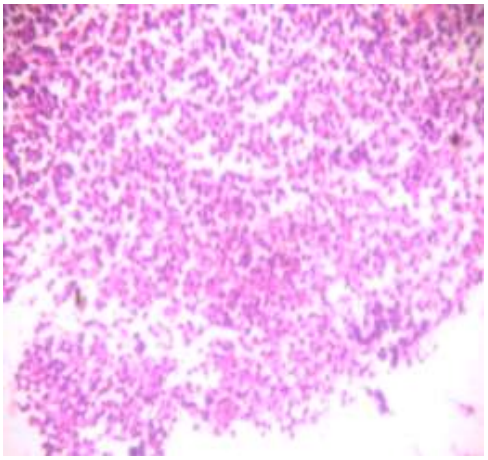

**Fig. 2a: Section showing sheets of plasmacytoid cells (low power)**

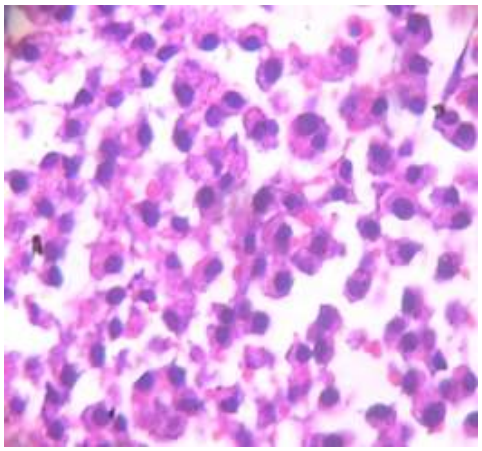

**Fig 2b: High power view with binuleate cell**

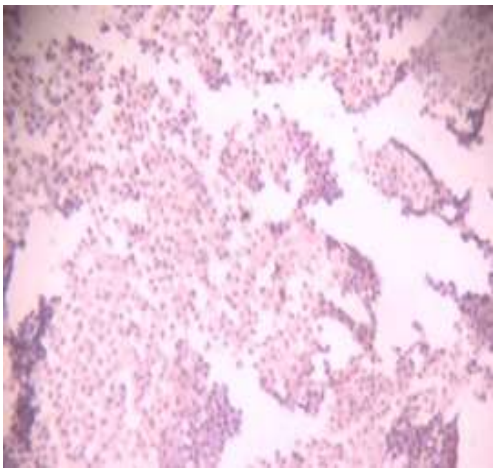

**Fig. 3a: Pancytokeratin negative**

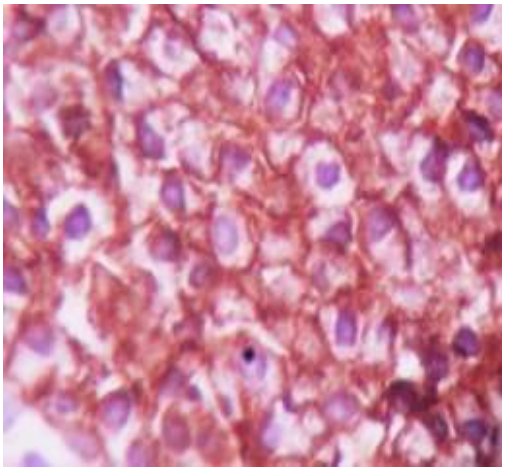

**Fig. 3b: CD138 Positive**

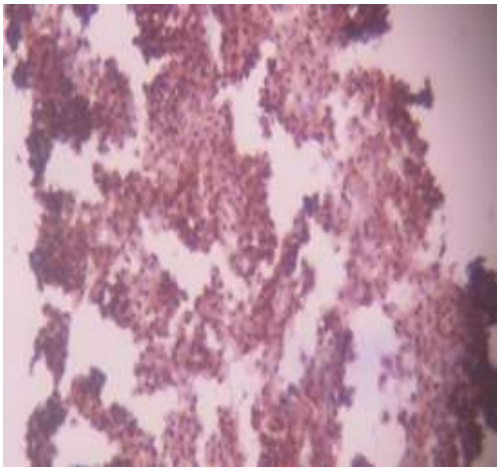

**Fig. 3c CD56 negative**

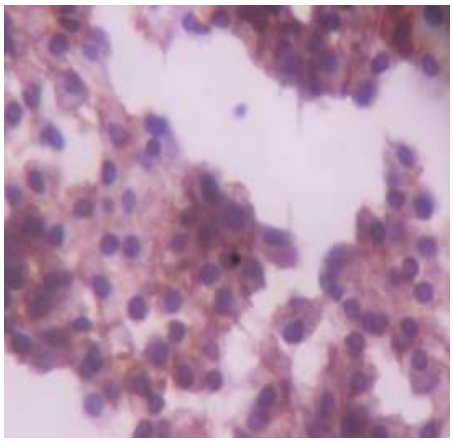

**Fig-3d: CD56 negative**

## DISCUSSION

Ductal and lobular carcinomas are the most frequent malignant disease of the breast [5]. Metastatic tumours to breast are rare in comparision to primary breast cancer. They have been reported to constitute about 0.4% -2.0% of all breast malignancies [6]. Haematopoietic malignancies of breast are very uncommon.

Multiple myeloma /Plasma cell myeloma is a disseminated B cell lineage neoplasm characterized by monoclonal proliferation of plasma cells in bone marrow. It may involve extraosseous sites but only in rare occasions has it been found in breast [5]. Dimopolous et al reported that solitary extramedullary plasmacytomas are less common than solitary bone plasmacytoma and have a better prognosis as the majority can be cured by local radiotherapy [7].

Plasmacytic tumors of breast may arise as a part of disseminated multiple myeloma or as an isolated initial manifestation of systemic disease or as an isolated plasmacytoma limited to breast [8]. Plasmacytoma involving the breast is a rare type of extramedullary plasmacytoma. 63 cases of breast plasmacytomas were reported between 1928 and 2009 [9]. More than half of these lesions were unilateral with the majority of these occurring in the setting of mutipla myeloma [7]. Majority of breast plasmacytomas are reported in women. The mean age at presentation was 53 years with tumor sizes ranging from 1 to 7.5cm [6].The clinical course of patients with mammary plasmacytomas depends on whether the lesion is solitary or is a part of disseminated multiple myeloma [8]. The overall prognosis of primary plasmacytoma of breast is excellent. In contrast, other metastatic tumors have poor prognosis [8].

The treatment of solitary plasmacytoma of breast consists of local excision followed by radiotherapy, whereas when breast involvement is secondary to disseminated multiple myeloma the treatment is mostly chemotherapy [5]. Therefore it is critical to distinguish an extramedullary palsmacytoma of breast from primary breast adenocarcinoma,so as to avoid unnecessary radical surgery and to guide therapy [6, 10]. FNAC and trucut biopsy have proven to be an excellent method in diagnosing primary and secondary malignancies [6]. Plasmacytoid cells on fine needle aspiraton cytology are seen in many diseases of breast, they include lobular carcinoma of breast, pleomorphic lobular carcinoma, infiltrating duct cell carcinoma of apocrine type , carcinoma with endocrine differentiation, plasmacytoma of breast [11]. Pleomorphic lobular carcinoma has features of both lobular and ductal carcinoma. Cellular smears show individual tumor cells that are 2 to3 times the size of cells in classic lobular carcinoma, with moderate nuclear pleomorphism, prominent nucleoli and moderate to abundant eosinophillic granular cytoplasm to finely vacuolated cytoplasm [11]. Endocrine carcinoma of breast also shows plasmacytoid cells, but they also have other typical features like salt and pepper chromatin and low nuclear grade [11]. Plasmacytomas of breast can be differentiated from these tumors by the presence of paranuclear halo, cart wheel chromatin, lack of intracytoplasmic mucin. Presence of multinucleate cells point towards plasmacytoma.

Differentials for plasmacytoma on tissue sections include plasma cell mastitis and malignant epitheloid melanoma [10]. Plasma cell mastitis consists of mixed chronic inflammatory infiltrate with many plasma cells around the ducts. The lumen is filled with histiocytes and debris and acute inflammatory cells may be present within the epithelial lining. In Malignant epitheloid melanoma plasmacytoid melanocytic cells are larger and pleomorphic with pseudonuclear inclusions, melanotic pigment and frequent mitotoic figures. On IHC they are positive for S-100 and HMB45 [10]. The histologic features of the breast lesions in systemic and solitary plasmacytomas are similar. In patients with multiple myeloma, the tumors have been composed of “abnormal” or “immature” plasma cells, whereas solitary plasmacytomas contain “a mixture of mature and immature plasma cells” [12].

## CONCLUSION

Ductal and lobular carcinomas are the most frequent malignant diseases of the breast, while metastatic tumors to the breast are rare and plasma cell myeloma involving breast is exceedingly rare. As plasmacytoid morphology is often encountered in breast carcinomas, Breast plasmacytomas can be misdiagnosed as primary breast cancer and has to be considered in a patient with history of multiple myeloma in the past. Though breast plasmacytomas are very rare, it is essential to diagnose it and differentiate it from primary breast cancer, so as to avoid unwanted surgery and guide therapy.

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