

## Secondary extramedullary plasmacytoma of the breast: Diagnosed by fine needle aspiration cytology

Pai R<sup>1</sup>, Kini H<sup>2</sup>, Ghartimagar D<sup>3</sup>

<sup>1</sup>Professor, <sup>2</sup>Associate Professor, <sup>3</sup>Post Graduate Student

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### Abstract

A 34 years old female who was a known case of multiple myeloma presented with a mass in the right breast. Clinically a differential diagnosis of breast carcinoma or secondary involvement by multiple myeloma was considered. Fine Needle Aspiration Cytology (FNAC) of the mass was performed which showed dispersed population of plasma cells with eccentrically placed nuclei, abundant cytoplasm and the characteristic paranuclear hof.

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Extramedullary plasmacytoma of the breast is an uncommon neoplasm, occurring either as a solitary tumour or as an evidence of disseminated multiple myeloma. Extramedullary plasmacytoma of the breast especially which is not associated with multiple myeloma is extremely rare. In majority of the cases, patients ultimately develop evidence of multiple myeloma. The overall prognosis of primary plasmacytoma of the breast is excellent. Follow up studies have shown that patients remained free of symptoms varying from 15 months<sup>1</sup> up to 9 years after the initial diagnosis<sup>2</sup>. Secondary involvement of plasmacytoma can occur during or after treatment of multiple myeloma. The most common site of the extramedullary plasmacytoma is the head and neck region, lymph node and skin. Metastatic tumours or the plasmacytoma which is secondary manifestation of myeloma have bad prognosis.

### Case Report

A 34 years old female, known case of multiple myeloma on Thalidomide treatment presented with a mass in the right breast. Examination revealed a mass which was firm in consistency, mobile, nontender and not fixed to the overlying skin or underlying structures. Mass was measuring approximately 6x7cms in size in upper outer quadrant of right breast. Hence a clinical differential diagnosis of either a carcinoma breast or secondary involvement of plasmacytoma was given and the patient was sent for FNAC.

Laboratory investigations showed low haemoglobin level (8.7gm %), ESR was raised (180mm/1<sup>st</sup> hour),

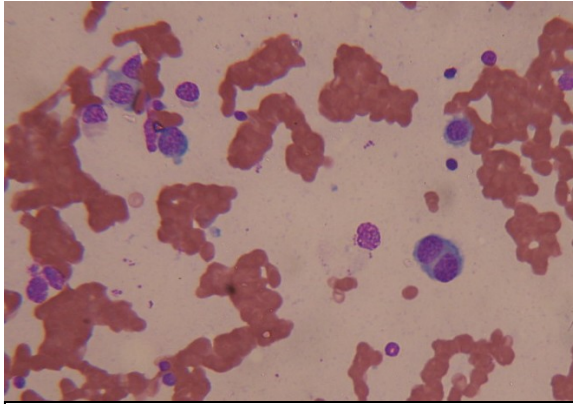
electrophoresis was normal, electrophoretogram showed an increase of the gamma globulin fraction and all other fractions were within normal limits. No abnormal bands were seen. USG abdomen showed multiple left renal calculi.

During the FNAC procedure, about 1ml of dark gush of blood was aspirated. Both wet fixed and air dried smears were made and stained with Papanicolaou stain and Haematoxylin and Eosin stain respectively. Smears were moderately cellular showing dispersed population of tumour cells. Cells were of medium to large size, oval in shape with dense cytoplasm and round eccentrically placed nuclei with coarse chromatin. Some of the cells were binucleated. Paranuclear hof was seen in few. Numerous malignant bare nuclei were scattered through out the smear. Background was hemorrhagic. In view of the history of multiple myeloma, the cytological features suggested secondary involvement of breast by myeloma cells.

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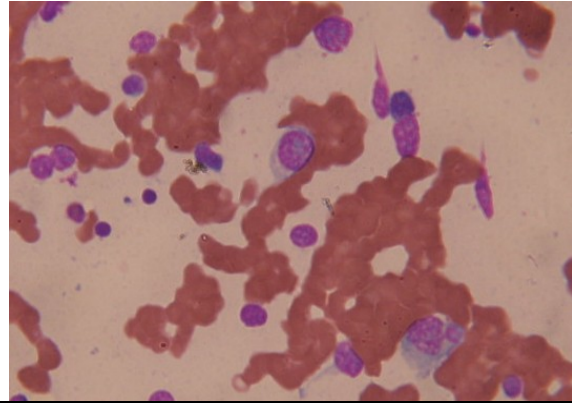
### Correspondence

Dr. Dilasma Gharti Magar  
Specialist Resident,  
Dept of Pathology  
Kasturba Medical College, Light House Hill Road, Mangalore-  
575001, India.  
Email: dilasmagm@hotmail.com



**Fig 1a**

Neoplastic plasma cells with paranuclear hof in 1a and binucleated plasma cells seen in 1b.



**Fig 1b**

### Discussion

Extramedullary plasmacytomas are known to occur in many different organs, such as lymph node, skin, lung, gastrointestinal tract and urinary bladder, but especially in the head and neck region. Occasional cases of extramedullary plasmacytomas are reported in breast<sup>1</sup>. They usually represent secondary involvement by a systemic process<sup>3, 4</sup> or develop after an extramedullary plasmacytoma has been discovered elsewhere in the body<sup>4</sup>. The clinical course of patients with mammary plasmacytomas depends on whether the lesion is solitary or part of disseminated myeloma<sup>5</sup>. The overall prognosis in primary plasmacytoma of the breast is excellent<sup>6</sup>. In contrast, metastatic tumours have poor prognosis. Tani E et al described that they were unable to find the cytological features which could be helpful in distinguishing a primary extramedullary from a second one i.e., tumour secondary to myeloma and this distinction requires clinical correlation with radiology, bone marrow biopsy and analysis of serum immunoglobulin levels<sup>7</sup>. Plasmacytomas are often a late manifestation of the disease and their appearance in a known case of multiple myeloma indicates failure of apparently successful therapy<sup>8</sup>. FNAC diagnosis of plasmacytoma at extramedullary sites offers the opportunity for non-invasive verification of widespread involvement.

Plasmacytoid morphology is often encountered in pleomorphic lobular carcinoma (PLC) of the breast. The presentation of breast carcinoma in patients with a known history of lymphoma or multiple myeloma has been described in the literature<sup>9</sup>. PLC is an aggressive variant of infiltrating lobular carcinoma. Smears in PLC are moderately cellular and show poorly cohesive clusters of epithelial cells<sup>10</sup>. Cells

have moderate to abundant eosinophilic, granular to finely vacuolated cytoplasm and round mildly atypical nuclei. Cells have been reported to have a plasmacytoid appearance due to eccentric nuclear location<sup>11</sup>. Intracytoplasmic neolumina with mucin is the most useful clue to the cytological recognition of PLC<sup>10</sup>.

Plasmacytic tumours of the breast may arise as a part of disseminated multiple myeloma or as the isolated initial manifestation of the systemic diseases or as an isolated plasmacytoma limited to the breast. In these tumours, cells show eccentrically placed nuclei, abundant cytoplasm and the characteristic paranuclear hof and cartwheel chromatin. Mitoses, pleomorphism and multinucleated cells may be seen. Cells invariably lack intracytoplasmic neolumina and mucin.

### Conclusion

FNAC diagnosis of plasmacytoma at the extramedullary site offers the opportunity for non-invasive verification of widespread involvement.

### References

1. De Chiara A, Losito S, Terracciano L, Di Giacomo R, Iaccarino G, Rubolotta MR. Primary plasmacytoma of the breast. *Archives Pathol Lab Med* 2001 Aug; 125(8): 1078-80.
2. Merino MJ. Plasmacytoma of the breast. *Archives Pathol Lab Med* 1984 Aug; 108(8): 676-8.
3. Ross JS, King TM, Spector JI, Zimble H, Basile RM. Plasmacytoma of the breast: an unusual case of recurrent myeloma. *Archives Intern Med* 1987; 147: 1838-40.

4. Bassett WB, Weiss RB. Plasmacytoma of the breast: an unusual manifestation of multiple myeloma. *South Med Journal* 1979; 72: 1492-94.
5. Vera-Alvarez J, Marigil-Gomez M, Garcia-Prats MD, Abscal-Agorreta M, Lopez-Lopez JI, Perez-Ruiz J. Extramedullary plasmacytoma presenting as primary mass in the breast. A case report. *Acta Cytol* 2003 Nov-Dec; 47(6): 1107-10.
6. Kumar PV, Owji SM, Talei AR, Malekhusseini SA. Extramedullary plasmacytoma: Fine needle aspiration findings. *Acta Cytol* 1997; 41: 363-68.
7. Tani E, Santos GC, Svedmyr E, Skoog L. fine-needle aspiration and immunocytochemistry of soft-tissue extramedullary plasma cell neoplasm. *Diagn Cytopathol* 1999 Mar; 20(3): 120-4.
8. Pai RR, Raghuvver CV. Extramedullary plasmacytoma diagnosed by fine needle aspiration cytology. A report of four cases. *Acta Cytol* 1996 Sep-Oct; 40(5): 963-6.
9. Khalbuss WE, Fischer G, Ahmad M, Villas B. Synchronous presentation of breast carcinoma with plasmacytoid cytomorphology and multiple myeloma. *Breast Journal* 2006 Mar-Apr; 12(2): 165-7.
10. Savante R Orell, Gregory F Sterrett, Darrel Whitaker. *Fine needle aspiration cytology*. 4<sup>th</sup> ed: Churchill Livingstone, 2005: 209.
11. Robinson IA, McKee G, Jackson PA, Cook MG, Kissin MW. Lobular carcinoma of breast: cytological features supporting the diagnosis of lobular cancer. *Diagn Cytopathol* 1995; 13(3): 196-201.