http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v8i1.39

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

**Original Research Article**

# Role of Fine Needle Aspiration Cytology (FNAC) for the Diagnosis of Metastatic Breast tumors in patients attending in Tertiary Care Hospital, at Muzaffarpur, Bihar

Authors
**Dr Ram Ugrah Prasad[1*], Dr Manoj Kumar[2]**
[1]Tutor, Department of Pathology, Sri Krishna Medical College, Muzaffarpur
[2]Professor and HOD, Department of Pathology, Sri Krishna Medical College, Muzaffarpur
*Corresponding Author
**Dr Ram Ugrah Prasad**
Tutor, Department of Pathology, Sri Krishna Medical College, Muzaffarpur, India

**Abstract**
**Objective:** *Present study was undertaken to evaluate the role of fine needle aspiration cytology (FNAC) to differentiate the tumors metastatic to the breast from primary breast malignancies.*
**Material and Methods:** *A total of 752 suspected cases of breast Pathology were sending from different OPD and IPD to our department for FNAC. After detailed clinical history, clinical examination and relevant routine tests FNAC (fine needle aspiration cytology) of Breast were performed.*
**Result:** *Out of 752 suspected cases of breast pathology, a total of 56 (7.4%) cases of malignant lesion were diagnosed by FNAC. Out of 56 breast malignancies, 04 (7.1%) cases were diagnosed as extra mammary metastatic breast tumors. The metastatic tumors included 1 cases of malignant melanoma, 1 case each of hematolymphoid malignancy, adenocarcinoma of the ovary and squamous cell carcinoma (left leg).*
**Conclusion:** *FNAC diagnosis of metastasis to the breast is essential in order to avoid unnecessary mastectomy and to ensure appropriate chemotherapy or irradiation treatment.*
**Keywords:** *Breast carcinoma, metastasis, FNAC, Extra mammary.*

## Introduction

Fine needle aspiration cytology has become a standard procedure in the evaluation of breast masses and is frequently a source of primary diagnosis. The cytological features of the usual breast tumors are well documented. Metastatic tumors are quite rare in the breast and most commonly arise from the contra lateral breast carcinomas. Clinically, the lesion is indistinguishable from a primary tumor. The other frequent metastatic breast tumors reported are melanoma, lymphoma, and carcinoma of the ovary and tumors of nasopharyngeal origin. The recognition of metastatic nature of such lesions is important to avoid unnecessary radical surgical procedures.

## Material and Method

The present study was conducted in the Department of Pathology, Sri Krishna Medical

College, Muzaffarpur with the help of Department of Obstetrics and gynecology, Surgery and Radiology **during the period of October 2017 to October 2019**. A total of 752 suspected cases of Breast Pathology were send from different OPD and IPD to our department for FNAC. After detailed clinical history, clinical examination, and relevant routine tests (CBC, Viral Marker, BT, CT, LFT and KFT) FNAC of Breast were performed.

All the aspirations were performed with a 22/23 gauge needle attached to 20 ml disposable syringe inserted into a commercial syringe holder. Approximately half of the smears were immediately wet fixed with 95% ethyl alcohol for haematoxylin and eosin staining, the remainder were air dried and stained by May Grunwald Giemsa stain. Review of the surgical pathology specimens and comparison with the cytological material was made in all the cases. The study excludes metastatic carcinomas arising from the contra lateral breast.

**Results**

Out of 752 suspected cases of breast pathology, a total of 56 (7.4%) cases of malignant lesion were diagnosed by FNAC. Out of 56 breast malignancies 04 (7.1%) cases were diagnosed as extra mammary metastatic breast tumors. These 4 patients were all females with an age range of 19 to 48 years. Both the breasts showed an equal incidence of involvement with 2 cases involving left breast only, 2 cases involving right breast only.

There were 1 cases of metastatic melanoma, both of which had a past history of malignant melanoma. Aspirate was cellular and showed predominantly singly scattered cells. The cells showed marked pleomorphism, high WC ratio and fine nuclear chromatin with large prominent nucleoli, nuclear inclusions and moderate amount of cytoplasm containing fine granular pigment which was positive for Masson Fontana stain, supporting a diagnosis of metastatic melanoma.

One case of metastatic Non-Hodgkin's lymphoma was included in the study. In this case, patient was already known to have high grade NHL with widely disseminated disease, involving the lungs, liver, hilar lymph nodes and retroperitoneal lymph nodes. Smears from the breast were highly cellular and showed predominantly discrete cells and a few loosely cohesive clusters. The cells were round to oval with scanty cytoplasm and large nucleus showing vesicular chromatin, irregular nuclear membrane and prominent nucleoli.

There were 1 cases of metastatic carcinoma to the breast. Patient presented with a huge mass in the pelvis. Transvaginal Ultrasonography of the ovary suggested a large heterogeneous mass showing anechoic cysts with septa and areas of calcification. Ultrasound guided FNAC from the ovarian mass was done which showed moderate to poorly differentiated adenocarcinoma of the ovary. Smears from the breast aspirate showed tumor cells with a papillary configuration. The tumor cells had large nuclei with prominent nucleoli and moderate amount of cytoplasm. The morphology was consistent with adeno carcinoma of the ovary.

One case was of metastasis from squamous cell carcinoma arising in the setting of Marjolin’s ulcer of the left leg. The patient had undergone above knee amputation of the left leg and after one year of surgery presented with a breast mass. The aspirate 1 from lump breast showed clusters as well as singly scattered squamous epithelial cells with well defined cytoplasm and pleomorphic, hyper-chromatic nuclei having coarse chromatin.

None of the cases was cytologically misinterpreted as primary breast cancer.

**Discussion**

Despite many diagnostic challenges in breast cytology, FNAC of this organ has become increasingly popular in the last few decades as it is a highly accurate diagnostic procedure. With the recent application of FNAC to the diagnosis of

both benign and malignant breast lesions, an increased experience in cases of metastatic neoplasm of the breast can be anticipated. There have been a few published reports noting the possibility of finding metastatic carcinoma in breast aspirates and describing the cytological features of such metastatic tumors. The literature in this field is expected to increase in the near future.

Metastatic tumors to the breast are unusual, particularly in comparison to the very frequent primary breast carcinoma. In large studies, the incidence of metastatic breast tumors has been reported to be 0.4% - 2% of all breast malignancies. In our study, Out of 56 breast malignancies 04 (7.1%) cases were diagnosed as extra mammary metastatic breast tumors, the incidence was 7.1%.

The most common metastatic breast tumors are melanoma, lymphoma, lung carcinoma, ovarian carcinoma, and soft tissue sarcomas, followed by gastrointestinal and genitourinary primaries. In men, the prostate is the most common extra mammary site. Rarely, a metastatic lesion to the breast may be the initial finding of an unsuspected extra mammary primary, with small cell carcinoma of the lung especially prone to these situations.

Most series have reported that metastatic tumors of the breast occur in patients younger than those with primary breast carcinoma. It is hypothesized that the breast in younger patients has a better blood supply, which might increase its potential to serve as a site for metastasize. Clinically, the metastatic lesion to the breast presents as freely movable, well defined, firm, and round mass commonly situated in the upper outer quadrant with none of the overlying skin changes which may be present in primary breast carcinomas.

On mammography, a metastatic tumor commonly presents as a discrete, dense mass with indistinct margins, devoid of microcalcification or spiculation. However, in papillary adenocarcinoma, of the ovary, calcification may be evident on mammography. Metastatic tumor may mimic benign breast disease or inflammatory carcinoma on mammography. In such cases, the role of FNAC as a diagnostic tool can be of immense importance to avoid radical and mutilating surgery. The cytological features of metastases vary according to the primary tumor. A suspicion of metastatic malignancy must come to mind if the tumor shows cytological features that are not typical for primary breast carcinoma. These features include clear cytoplasm, intracytoplasmic pigment, undifferentiated small cells and malignant cells of hematopoietic origin. The clinical information about the previous malignancy and an unusual cytological pattern are the best clues for identifying a metastatic tumor. The review of histological or cytological material referring to the primary tumor may be necessary for correct evaluation of the tumor cells.

Metastasis to the breast is an interesting field of study, where a specific report by the pathologist is important to guide the clinician for appropriate management of the patient. The overall prognosis of patients with metastatic cancer of the breast is poor, with 80% dying within a years.

## Conclusion

FNAC of breast is simple, safe, cheap, and easy to perform, without anesthesia, less traumatic and OPD procedure for diagnosis of breast pathology. FNAC diagnosis of metastasis breast can provide a preoperative diagnosis with reasonable accuracy as compare to histology and gives guidelines to management in advanced carcinoma and essential to avoid surgery and to ensure appropriate chemo-therapy or irradiation treatment.

## References

1. McCrea ES, Johnston C, Haney PI. Metastasis to the breast. Am J Roentgeno11983; 141:685-90.
2. Silverman JF, Feldman PS, Covell JL, Frable JW. Fine needle aspiration cytology of neoplasms metastatic to the breast. Acta Cytol 1987; 31:291-300.

3. Deshpande AH, Munshi MM, Lele VR, Babhate SK. Aspiration cytology of extramammary tumours metastatic to the breast. Diagn. Cytopathol 1999; 21:319-23.
4. Sironi M, Claren R, Delpiano C, Santangelo M, Spinelli M. Cytological findings of adenocarcinomas metastatic to the breast. Diagn Cytopathol2001; 24:369-70.
5. Domanski HA. Metastases to the breast from extramammary neoplasms: a report of six cases with diagnosis by fine needle aspiration cytology. Acta Cyto11996; 40:1293-300.
6. Eisenberg AJ, Hadju SI, Wilhelmus J, Melamed MR, Kinne D. Preoperative aspiration cytology of breast tumours. Acta Cytol 1986; 30:135-46.
7. D'Orsi CJ, Feldhaus L, Sonnenfeld M. Unusual lesions of the breast. Radio! Clin North Am1983; 21:67-80.
8. Sniege N, Zachariah S, Fanning TV, Dekmezlan RH, Ordonez MG. Fine needle aspiration cytology of metastatic neoplasm in the breast. Am J Clin Pathol1989; 92:27-35.
9. Hajdu SI, Urban JA. Cancers metastatic to the breast. Cancer 1972; 29:1691-6.
10. McIntosh HI, Hooper AA, Millis RR, Greening WP. Metastatic carcinoma within the breast. Clin Onco11976; 2:393-401.
11. Royen PM, Zitter FMH Jr. Ovarian carcinoma metastatic to the breast. Br J Radio! 1974; 47:356-7.
12. Odile D, Gattuso P, Razan W, Moroz K, Durandhar N. Unusual cases of metastases to the breast. Acta Cytol 2002; 46:377-85.
13. Hejmadi RK, Day I.J, Young JA. Extramammary metastatic neoplasm in the breast: a cytomorphological study of 11 cases. Cytopatho12003; 14:191-4.