



MYSTERY UNREVEALED: ROLE OF ASPIRATION CYTOLOGY IN CUTANEOUS METASTASIS

Pathology

Dr. Sampada Kawale*

Junior resident, Dept. of Pathology, GMC Nagpur *Corresponding Author

Dr. Anupama Gupta

Associate Professor, Dept. of Pathology, GMC Nagpur.

Dr. Archana Deshpande

Professor and Head, Dept. of Pathology, GMC Nagpur

ABSTRACT

Introduction: Cutaneous metastasis can be the presenting manifestation of visceral malignancy rarely. The incidence of cutaneous metastasis increases with age and it is more after the fifth decade of life. Fine needle aspiration cytology of the cutaneous lesion can be useful for the diagnosis of the primary malignancy. It is a minimally invasive, rapid and cost-effective modality. **Aim:** To evaluate the role of fine needle aspiration as a tool in diagnosis of cutaneous metastasis. **Materials and methods:** FNAC were performed in 10 patients presenting with swelling over various subcutaneous locations like scalp, arm, inguinal region, anterior axillary fold, abdominal and chest wall after clinical and radiological evaluation. Smears were analysed by a cytologist. **Results:** The age ranged from 45 to 75 years. Out of ten cases of cutaneous metastasis, 3 cases were of malignant melanoma, 2 cases were each of hepatocellular carcinoma and renal cell carcinoma, 1 case each of mucinous adenocarcinoma, small cell carcinoma of lung and follicular variant of papillary thyroid carcinoma. FNAC proved to be of help in early diagnosis of these known and unknown primary malignancies.

KEYWORDS

Cutaneous metastasis, FNAC, primary malignancy.

INTRODUCTION:

Visceral malignancies are known to present with cutaneous metastasis from various organs and it is hallmark of a widely spread malignancy. The incidence of cutaneous metastasis increases with age and it is more after the fifth decade of life.¹ An estimated 0.7-9% of these tumors metastasize to the skin and as such skin is an uncommon site of metastatic carcinoma.² Primary malignancies of the breast, lung, and gastrointestinal tract have a greater propensity to metastasize to the skin.³ Fine needle aspiration cytology of the cutaneous lesion is useful for the diagnosis of the primary malignancy. It is a minimally invasive, rapid and cost-effective modality. We present here ten interesting cases of cutaneous metastasis from different organs like lung, liver, female genital tract, kidney, thyroid etc. at various subcutaneous locations like scalp, arm, inguinal region, anterior axillary fold, abdominal and chest wall.

AIMS AND OBJECTIVES:

To evaluate the role of fine needle aspiration as a tool in diagnosis of cutaneous metastasis.

MATERIALS AND METHODS:

This is a descriptive study done over a period of one year from January 2022 to December 2022 at tertiary care hospital after taking ethical clearance and informed consent. It was aimed to highlight the role of cytology in cutaneous metastatic lesions and to study cytomorphological spectrum in these lesions. FNAC was performed using 24 gauge needles by non-aspiration as well as aspiration techniques in a series of total 10 patients of all age group presenting to cytology outpatient department with swelling over various subcutaneous locations like scalp, arm, inguinal region, anterior axillary fold, abdominal and chest wall as a part of diagnostic procedure. Radiological guided FNAC was done as and when needed. Both wet fixed and dry smears were kept and stained with haematoxylin and eosin (H E), Papanicolaou (Pap) and May Grunwald Giemsa (MGG) stains. Special stains were done as and when indicated.

RESULTS:

Out of total 10 cases, age ranged from 45- 75 years. Patients presenting with swelling over various subcutaneous locations like scalp, arm, abdominal and chest wall. The study includes three cases of malignant melanoma, two cases each of metastasis from Hepatocellular carcinoma and renal cell carcinoma and one case each of 1 case each of mucinous adenocarcinoma, small cell carcinoma of lung and follicular variant of papillary thyroid carcinoma.

DISCUSSION:

Cutaneous metastases from visceral carcinoma are relatively rare and regardless of histiotype or organ of primary malignancy usually represents a diffuse metastatic disease with dismal prognosis.⁴ The incidence of cutaneous metastases varies from 0.8 to 5%.⁵ The rates reported in different literatures are as high as 10.4%.³ The most frequent primary tumor to metastasize to the skin are from breast carcinoma followed by lung, colorectal, renal, ovarian and bladder carcinoma with rates of 3.4-4% each.⁶ Common regions for cutaneous metastasis are the scalp, abdomen, chest, back, and extremities.⁴

We report here a series of interesting cases which includes a case of metastasis from Mucinous adenocarcinoma of endocervix presented with nodule over anterior abdominal wall. Cytological smears were showing cells in monolayered sheets, clusters, acinar/ glandular formation. Cells were showing mild to moderate pleomorphism. Background shows plenty of mucin and necrosis. (Figure 1)

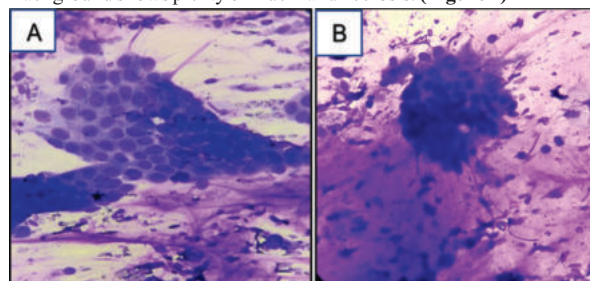


Figure 1: (A,B) (MGG 40x)-Metastasis from Mucinous adenocarcinoma endocervix. FNAC smears show cells in monolayered sheets, acinar/ glandular formation. Background shows plenty of mucin and necrosis.

Of the two cases of renal cell carcinoma, one was 71-year-old male patient having large swelling over occipital region since 2 months. Cytological smears were showing cells arranged in small sheets, clusters with large pleomorphic nuclei. Mitosis, cytoplasmic vacuolations were also noted. (Figure 2) Diagnosis was given as metastasis of epithelial malignancy. Later CT scan was done and right renal mass was present. So, this was the case of metastasis from renal cell carcinoma.

Another case was 60-year-old female operated case of renal cell carcinoma, presented with swelling over anterior abdominal wall. FNAC from the swelling were diagnostic of metastasis from renal cell carcinoma. (Figure 3)

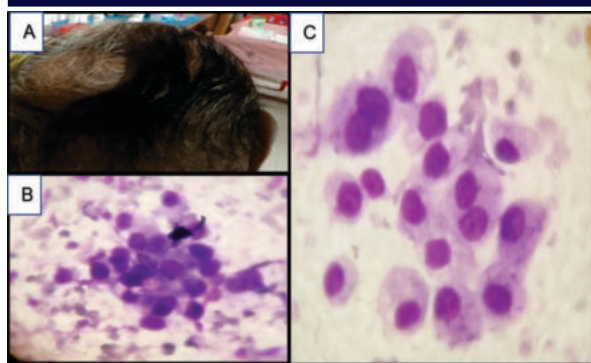


Figure 2: Metastasis from Renal cell carcinoma (A)- Swelling over occipital region (B, C) (MGG 40x)-FNAC smears show cells are arranged in small sheets, clusters and dissociated cells with large pleomorphic nuclei. Mitosis+. Cytoplasmic vacuolations+.

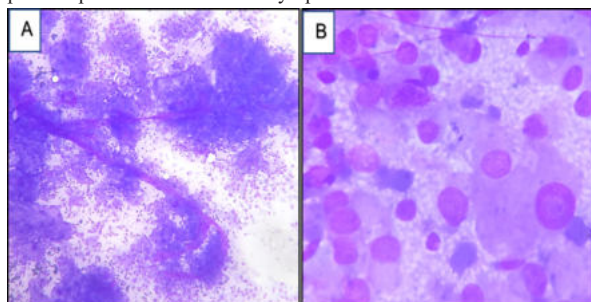


Figure 3: (A, B) Metastasis from Renal cell carcinoma (MGG,10X,40X)-Smears show abundant cellularity, cells are arranged in papillary clusters attached to basement membrane material, as well as in loose sheets and clusters. Cells are round to polygonal with abundant eosinophilic cytoplasm, at places vacuolated, pleomorphic round nuclei.

Two cases presented with anterior chest wall swelling. Of which one was 67-year-old male, chronic smoker and alcoholic. FNAC smears showed cells having scant cytoplasm and pleomorphic, irregular nuclei with finely granular chromatin and small nucleoli. Nuclear moulding and mitosis were also noted. (Figure 4) Diagnosis was given as small cell carcinoma lung. Later, chest Xray revealed lung mass and the diagnosis was confirmed. Second case of anterior chest wall swelling was 56-year-old female. FNAC from swelling showed cells arranged in papillary clusters and follicles having ovoid, pale nucleus, nuclear overlapping, nuclear grooves, pleomorphism with finely granular, powdery chromatin. Cytological features were of follicular variant of papillary thyroid carcinoma. (Figure 5) She also had anterior neck swelling and USG revealed thyroid swelling. FNAC smears showed similar features of follicular variant of papillary thyroid carcinoma. Later final diagnosis based on histopathology and immunohistochemistry was the same, (Cytokeratin and TTF 1-positive, calcitonin and synaptophysin-negative).

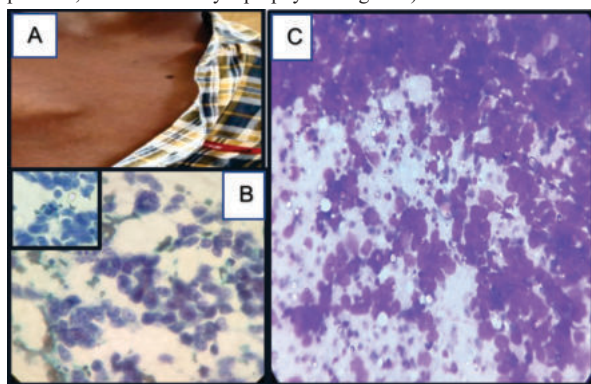


Figure 4: Metastasis from Small cell carcinoma lung (A) Swelling over anterior chest wall. (B) (PAP,100x)-FNAC smears show cells with finely granular chromatin, small nucleoli, nuclear moulding and mitosis. (C) (MGG 40x)-FNAC smears are abundantly cellular with medium sized cells arranged in sheets and clusters. Cells have pleomorphic, irregular nuclei with scant cytoplasm

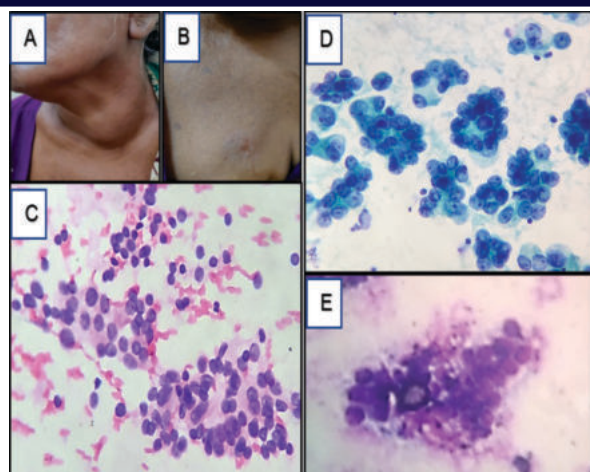


Figure 5: Follicular variant of papillary thyroid carcinoma (A, B) Swelling over anterior neck and anterior chest wall. (C) (H&E,10X)-FNAC smears show cells arranged in papillary clusters and follicles. (D) (Pap,10X)-Cells have ovoid, pale nucleus, nuclear overlapping, nuclear grooves, hyperchromatic nucleus, pleomorphism with finely granular, powdery chromatin. (E) (MGG,40X) Intranuclear cytoplasmic inclusions.

Out of three cases of malignant melanoma, one was 75-year-old male, known case of Malignant amelanotic melanoma of right great toe presented with swelling over left forearm; second was 70-year-old male having malignant melanoma of anal region and presented with inguinal swelling; third case was 55-year-old male having malignant melanoma of hand, presented with swelling over anterior axillary fold. Cytological smears showed cells with moderate cytoplasm and spindle, hyperchromatic nuclei having large nucleoli. Cells showed nuclear pleomorphism, binucleation and intracytoplasmic brown granular pigment (melanin). (Figure 6) Few bizarre giant cells were noted. Diagnosis was given as Metastasis of malignant melanoma.

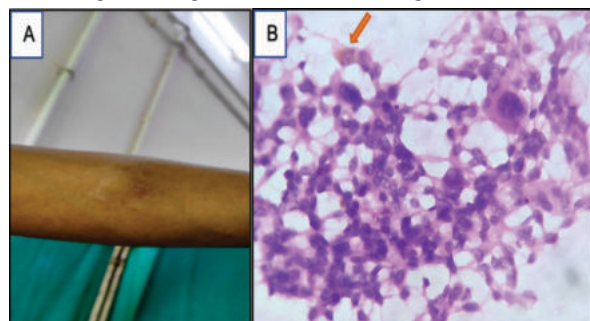


Figure 6: Metastasis of malignant melanoma (A) Swelling over forearm. (B) (H E,10X) FNAC smears are highly cellular with cells arranged in groups, clusters. Cells show nuclear pleomorphism with bizarre giant cells. Cells are round to oval with spindle, hyperchromatic nuclei, binucleation, large nucleoli, moderate cytoplasm and intracytoplasmic brown granular pigment (melanin) (Arrow).

Two cases of hepatocellular carcinoma presented with cutaneous swelling, one over fronto-parietal region and another over left supraclavicular region. In both the cases FNAC smears were cellular, arranged in clusters, trabeculae. Cells were polygonal having abundant cytoplasm, central enlarged round nuclei with atypia, high N:C ratio and prominent nucleoli. Binucleation, intranuclear cytoplasmic inclusions seen. Intracytoplasmic pigment (Green black) was noted on MGG stained smear. Cytological diagnosis was given as Metastasis from Hepatocellular carcinoma. IHC marker (hep Par 1) was positive on cell block. (Figure 7)

In approximately 8% of cases, cutaneous metastasis may be the presenting feature.⁷ Hence early detection of metastasis to skin is essential to initiate appropriate treatment. Gupta et al reported majority of the cases in the adult age group above fifth decade of life similar to our study.⁸ FNAC is preferred diagnostic modality in suspected cutaneous metastasis and to differentiate it from other primary tumor.

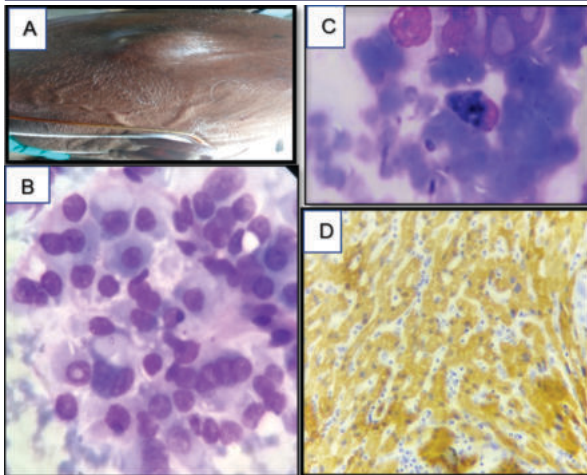


Figure 7: Metastasis from Hepatocellular carcinoma (A) Swelling over frontoparietal region. (B)(MGG,40X)- Smears show polygonal cells with high N:C ratio, central enlarged round nuclei with atypia, binucleation, intranuclear cytoplasmic inclusions and abundant cytoplasm. (C) (MGG,40X)- Intracytoplasmic pigment (Green black) (D) 10X IHC- hep Par 1 positive

CONCLUSION:

FNAC is a rapid and safe technique that can be used as a first line of investigation for confirmation of metastatic lesions of the skin. Cutaneous lesions can be the presenting manifestation of underlying malignancy. Thorough malignancy work up must include FNAC of such lesions.

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