

## Clinico- Cyto-Pathological Study of Cutaneous Metastatic Lesions Using Fine Needle Aspiration (FNAC) in a Tertiary Hospital from Kashmir

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### Abstract

**Background:** Cutaneous metastasis refers to growth of cancer cells in skin from an internal malignancy they are clinically important because they may represent the terminal stage of carcinoma, sign of relapse following failure of therapy or sometimes first manifestation of internal malignancy.

**Aims and Objectives:** This study focuses on the role of Fine Needle Aspiration Cytology (FNAC) in the diagnosis of cutaneous metastatic deposits.

**Materials and Methods:** The present study was carried out from Jan 2018 to Jan 2020 in the Department of Pathology, Government Medical College Srinagar j&K India. FNAC was done using 22-gauge needle and 10 ml disposable syringe and the smears were examined and morphology of primary tumour assessed.

**Results:** Total 17 patients were included in the study. The age of subjects ranged from 25 to 63 and majority of subjects were males. Chest wall and scalp were the most common sites of cutaneous metastatic deposits. Adenocarcinoma was the predominant type of tumour which caused deposits. The most common primary organ was lung in males and breast in females followed by gallbladder and kidney.

**Conclusion:** FNAC is minimally invasive, safe, rapid and reliable method for the diagnosis of cutaneous metastases. Majority of these cases can be diagnosed accurately by skilled and experienced pathologists which helps the clinicians to take prompt decision for further therapeutic management.

**Keywords:** FNAC, Cutaneous Metastasis, Lung

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## Introduction

Cutaneous metastasis is defined as the spread of tumour from the site of its primary site of origin to the skin [1]. Cutaneous metastasis indicates adverse prognosis for the cancer patients. It occurs due to systemic spread of primary tumor through vascular or lymphatic channels. These lesions can appear as nodule, red patch or as a fibrous scar like plaque in skin. Though most of the malignant tumors can metastasize to skin but a few shows higher propensities for cutaneous metastasis such as malignant melanoma, carcinoma of breast, lung, colon, rectum, ovary and oral cavity. The incidence of cutaneous metastasis varies from 0.5 to 10.4%. [2-6]. Often cutaneous metastases go unrecognized and are mistaken for primary skin tumors or inflammatory process and needs cytological or histopathological confirmation [7].

FNAC is a non-invasive procedure which can distinguish metastatic deposits from other skin lesions [8,9]. This is important since in some cases, these lesions may be the only external sign of malignancy. A high index of clinical suspicion is required for an early diagnosis to enable prompt treatment. This study focuses on the role of FNAC in the diagnosis of cutaneous metastatic deposits.

## Materials and Methods

The present study was carried out from Jan 2018 to Jan 2020 in in the Department of Pathology, Government Medical College Srinagar j&K India. Out of the total 11300 cases of FNACs done over a period of two years 4500 (39.1%) were cutaneous lesions among cutaneous lesions only 17 cases of metastasis with known primary were included in study. ALL primary cutaneous malignancies were excluded from the study.

Clinical history and details of all relevant investigations performed were undertaken.

FNAC was done using 22-gauge needle and 10 ml disposable syringe without anaesthesia. At least 2-3 passes were done to obtain sufficient material. Both air dried and wet smears were prepared and stained by MGG and Papanicolaou (Pap) stain respectively. Special stain like Periodic acid Schiff (PAS stain) was performed where ever it was required. No complications related to procedure was seen. Statistical analysis was done by using Microsoft Office Excel and the variables were analysed using standard analytic techniques with SPSS version 16.0 for Windows. The quantitative variables were expressed as mean and qualitative variables were expressed as percentages.

## Results

In present study 17 cases of cutaneous metastasis with 9 males (52.94%) and 8 females (47.05%) M:F ratio of 1.12:1 was included. The age of patients ranged from 25 to 63years with mean age of 43.41 years. Skin nodule was the most common presentation. A single nodule was observed in 14 (82.35%) of cases and more than one nodule was seen in 3 (17.4%) cases. The most common primary site of metastasis in males was of lung 6 cases (35.29%) and in females was breast 5 cases (29.41%) followed by two cases of gall bladder, two cases of renal cell carcinoma and one case of follicular carcinoma.

Chest wall and scalp were most common metastatic sites 6 cases each (35.29%) followed by 3 cases of abdominal wall and 2 cases of forearm. The most common cytological diagnosis was adenocarcinoma. Patients were reviewed on follow-up, when the radiological report was analysed and a final cytological report was issued based on the entire workup.

**Table 1: Summary of cases NU = 17**

S.o	Age/Sex	Primary	Site of metastasis	Number of lesions	Cytological diagnosis
1	45/F	Breast	Chest	Single	Ductal ca
2	52/F	Lung	Scalp	Single	SCC
3	38/F	Gall bladder	Abdomen	Single	Adeno ca
4	63/M	Lung	Chest	Single	SCC
5	42/F	Breast	Scalp	Single	Ductal ca
6	42/M	Kidney	Chest	Single	RCC
7	35/F	Lung	Scalp	Single	Adeno ca
8	38/M	Lung	Chest	Single	SCC
9	55/F	Breast	Chest	Multiple	Ductal ca
10	55/M	Lung	Scalp	Single	Adeno ca
11	50/F	Kidney	Forearm	Single	RCC
12	52/F	Lung	Abdomen	Single	SCC
13	46/M	Lung	Scalp	Single	SCC
14	28/M	Gall bladder	Abdomen	Multiple	Adeno ca
15	51/F	Thyroid	Scalp	Single	Follicular ca
16	25/F	Breast	Chest	Single	Ductal ca
17	60/M	Breast	Forearm	Multiple	Ductal ca

Adeno ca: Adenocarcinoma, SCC: Squamous cell carcinoma, RCC: Renal cell carcinoma.

## Discussion

Cutaneous metastases are a poor prognostic indicator for majority of patients with malignancy. Such lesions may indicate failure of ongoing therapy or recurrence of a cancer which was previously cured or, rarely it may be the first sign of unsuspected malignancy [10]. Cutaneous metastases are clinically important because sometimes they can be the first manifestation of internal malignancy. In some subjects, it may be the only external manifestation of an occult primary tumour.

Hence, an early diagnosis using a cost effective technique is of tremendous value in clinical practice.

Although Spencer *et al.* reported a higher incidence of 9–10% in their autopsy study on patients with internal malignancies the extensive review of the literature published from 2009 to 2018 indicate an incidence of 0.8–5% in these cases [2] table 2 The current study was done on 17 patients and showed an incidence of 0.37%.

**Table 2: Summary of review of literature from 2009 to 2018**

S. No	Authors	Year	No of cases	Incidence (%)	MC primary	MC metastatic site	MC cytological diagnosis
1	Sharma <i>et al</i> [11]	2009	95	0.17	Lung	Chest	Adeno ca
2	Hu [12]	2009	124	1.02	Breast	Chest	Adeno ca
3	Karki <i>et al</i> [13]	2011	19	0.3	Lung	Chest	Adeno ca
4	Qualla [14]	2012	12	0.46	Breast	Head and neck	PD ca
5	Choudary [15]	2013	16	4.2	Ovary	-	Adeno ca
6	El Khoury	2014	72	-	Breast	Chest	Adeno ca

	[16]						
7	Handa [17]	2017	138	-	Breast	Chest	Adeno ca
8	Barkha [18]	2018	25	1.02	Breast	Abdo,en and chest	Adeno ca
9	Current	2020	17	0.37	Lung	Chest and scalp	Adeno ca

Cutaneous metastasis (CM) occurs in both genders with a slight predilection in males as seen in the current study with M:F ratio of 1.12:1. Though the phenomenon is noticed among children also; majority of the cases occur in the adult age group after fifth decade of life [11]. In the present study, 47% of the cases were above 50 years of age. Cutaneous metastasis can have a wide spectrum of clinical presentations and broadly divided into three groups - i.) nodular - The first sign of skin metastasis is characterized by a firm, mobile, non-tender nodule in skin which can be of barely noticeable lesions to a large tumor. The nodule may be skin coloured, red or blue black as in melanoma.

ii) Carcinoma en cuirasse or sclerodermoid carcinoma characterized by extensive thickening, oedema and fibrosis of dermis and subcutis giving rise to a sclerodermoid pattern which occurs due to infiltration of cancer cells into collagen tissue of skin. iii) Inflammatory or carcinoma erysipeloides characterized by well demarcated red patches due to local spread of primary cancer with blockage of lymphatics in adjacent skin. [19,20]. Most of the studies reveal nodule as the predominant presentation. The present study had 100% of the cases presenting as single or multiple nodule. Single nodule was seen in majority of cases 82.35%.

This can be explained by the fact that nodular lesions are most amenable to FNAC and therefore referred for the procedure that acts as a useful technique in identifying these cases, hence, often obviating the need for surgical biopsies [19]. Positive malignant cells on cytology, in cases with known primary, often indicate either failure of

therapy/recurrence or development of secondary malignancies [21]. Extensive literature research reveals breast and lung as the most common primary site in the females and males, respectively. Similar results were seen in our study [22].

However, in the study done by Barkha Gupta *et al* breast was the most common primary site in females; gall bladder was the most common primary site in the males [18]. The most common site of cutaneous metastasis was observed to be chest wall and scalp which was similar to observations made by Karki *et al.* and Sharma *et al.* [11,13] but differed from Gupta *et. al.* and Pak. *et al.* who observed the common site for cutaneous metastasis to be abdomen and back respectively [21,23].

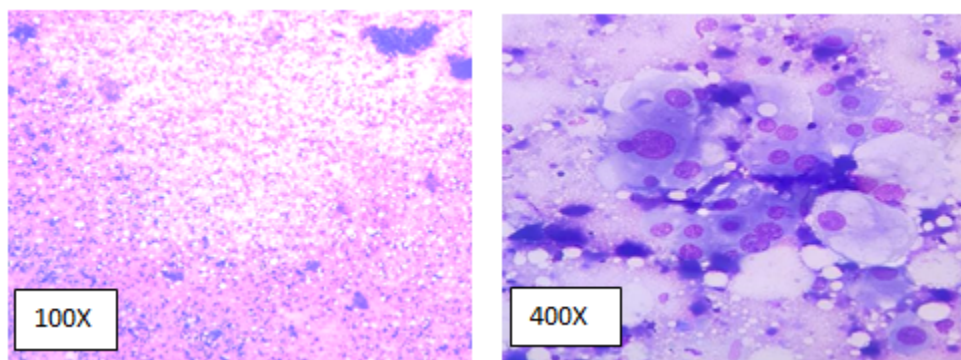
Microscopically, the most common primary tumor in females was observed to be carcinoma breast which was observed in 62.5% of total 8 females. In a large case study, Lookingbill *et al.* also observed carcinoma breast in 51.0% of total cases with cutaneous metastasis and 73.0% of all females [24]. Studies conducted by Chaudhury *et al.*, Sharma *et al.*, and Gupta *et al.* also documented similar findings [11,15,23]. However, Karki *et al.* and Pak *et al.* observed colon and lung to be major primary site of cutaneous metastasis in females [13,21]. We observed carcinoma lung as primary site for cutaneous metastasis in males which was similar to the observations made by others [13,15,21].

Although cases with known primary are easy to diagnose, cases with unsuspected primary impose diagnostic challenge and masquerade primary skin adnexal tumors. Eccrine sweat

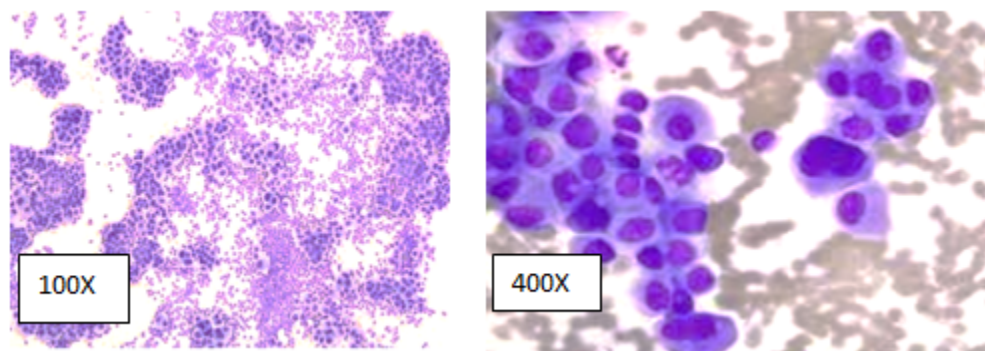
gland tumors often show tubular differentiation, squamoid as well as clear cell change and can be confused with duct carcinoma of breast or renal cell carcinoma. Demonstration of presence of glycogen in renal cells using PAS along with diastase sensitivity helps in distinction of the site of origin [13].

Primary versus metastatic adenocarcinomas can be distinguished based on morphological clues like presence of extracellular pools of mucin, signet cell morphology, three dimensional papillae that often points toward

metastatic etiology [25]. Special stains such as alcian blue at pH 2.5 can distinguish among sulfated mucins present in adenoid cystic carcinoma and adenoid basal cell carcinoma of lacrimal and salivary glands from nonsulfated mucins present in gastrointestinal tract, breast, and lung [22]. Cytomorphology in adjunction with ancillary techniques like special stains, IHC, cell blocks, and flow cytometry can often give clue to the possible primary site in cases with unknown primary, substantially reducing the time and money spent on investigations.



**Figure 1: showing deposits of squamous cell carcinoma in scalp. MGG**



**Figure 2: Showing deposits of ductal carcinoma MGG**

## Conclusion

This study depicts the clinico-cytopathological features of cutaneous metastatic lesions as well as highlights the utility of FNAC in the diagnosis of various forms of cutaneous metastatic lesions. FNAC is a minimally invasive procedure that can be used for ascertaining the nature of skin

lesions. The procedure can be effectively used as a replacement for punch/trucut biopsies and as a follow-up modality in known cancer patients.

In cases with occult primary, cytomorphology can provide invaluable clue to the possible primary sites and aid in early detection of

primary observed in patients with known primary or unknown primaries from internal malignancy. Majority of these cases can be diagnosed accurately by skilled and experienced pathologists which helps the clinicians to take prompt decision for further therapeutic management.

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