

# Fine Needle Aspiration Study of Cutaneous Metastatic Deposits in a Tertiary Care Centre in South India

K RAJASREE VARMA, PC MURALEEDHARAN, PP SATHI, DIVYA RADHAKRISHNAN

## ABSTRACT

**Introduction:** Cutaneous metastases are seen with a wide variety of internal malignancies. Cutaneous metastases 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.

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

**Materials and Methods:** This was a cohort study done in the Department of Pathology, Government Medical College, Kozhikode, India. Study subjects included retrospective cases diagnosed cytologically as cutaneous metastasis from January 2013 to June 2017. The smears were examined and morphology

of primary tumour assessed. The subjects were divided into those with and without a known primary tumour.

**Results:** Total 128 patients were included in the study. The age of subjects ranged from 15 to 90 and majority of subjects were males. Chest wall was the most common site of cutaneous metastatic deposits. Adenocarcinoma was the predominant type of tumour which caused deposits. The most common primary organ was lung followed by breast. In younger age group, tumours observed were Ewing's sarcoma and nasopharyngeal carcinoma.

**Conclusion:** This study focuses on the importance of FNAC in assessing predominant patterns of spread of various primary tumours. Cutaneous deposits should be assessed seriously as they may be the first manifestation of an unknown tumour or may be a sign of relapse.

**Keywords:** Adenocarcinoma, Chest wall, Internal malignancy, Squamous cell carcinoma, Unknown primary

## INTRODUCTION

Cutaneous metastasis is defined as the spread of tumour from the site of its primary origin to the skin [1]. Cutaneous metastasis can occur in a wide range of internal malignancies and is considered as a poor prognostic marker in most cancers [2]. In some instances, it can be the initial presentation of an underlying asymptomatic tumour [3].

The risk of cutaneous metastatic deposits increases with advancing age [4]. The most common primary malignancies which can cause cutaneous metastasis are breast, lung and gastrointestinal malignancies [5,6]. Rarely, other malignancies like thyroid carcinoma or hepatocellular carcinoma can cause skin deposits.

FNAC is a non-invasive procedure which can distinguish metastatic deposits from other skin lesions [7,8]. 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

This retrospective study was conducted in the Department of Pathology, Government Medical College, Kozhikode, Kerala,

India between the period of January 2013 to June 2017. Total 128 retrospective cases diagnosed with cutaneous metastasis by FNAC in the department during study period, were considered for the study. The subjects whose slides could not be retrieved were excluded from the study. Ethical clearance was obtained from institutional ethics committee.

The case records and slides of patients with metastatic cutaneous nodules were retrieved from the Cytology Department. Age, sex, site of deposit, histological type of tumour and in selected cases the possible site of primary malignancy were studied.

The smears for examination were wet fixed, Papanicolau stained smears. The smears were divided into cases with known primary tumour and those with unknown primaries. In both groups, the predominant histological type of tumour and predominant site of metastatic deposits were assessed. In those with known primary, the sites of primary tumour were assessed.

## STATISTICAL ANALYSIS

The data was entered in the spread sheets of 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 this study, a total of 128 patients between the age group of 15-90 years were included in the study, the mean being 57.7 years. Of all the 128 subjects, 82 (64.1%) were males and 46 (35.9 %) were females.

Out of 128 cases, 89 (69.5%) subjects had a previous primary tumour, while 39 (30.5%) had no known primary malignancy. The sites of cutaneous deposits were chest wall, abdomen (including umbilicus), scalp, face, arm, back and thigh. The predominant site of cutaneous deposits was chest wall.

The subjects with unknown primary malignancy were assessed for the sites of cutaneous deposits and the main histomorphological types of malignancy were assessed. Abdominal wall was the major site of cutaneous metastasis and the main tumour type was adenocarcinoma [Table/Fig-1].

Total 89 subjects had a prior history of internal malignancy. The most common site of cutaneous deposit among these subjects was chest wall [Table/Fig-2]. Most common primary malignancy was adenocarcinoma, and most common

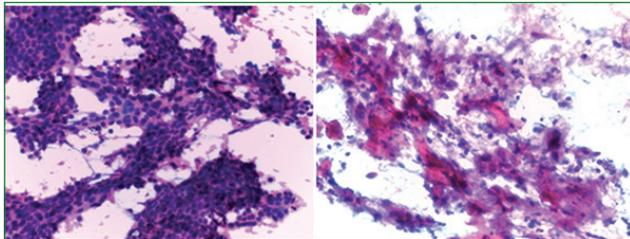
Site	Morphological Diagnosis			
	Adeno-carcinoma	Squamous Cell Carcinoma	Poorly differentiated Carcinoma	Neuro-endocrine carcinoma
Scalp	5	-	-	-
Face	-	-	-	1
Chest	7	1	1	2
Back	3	2		-
Abdomen	9	1	2	-
Thigh	2	2	1	-

**[Table/Fig-1]:** FNA diagnoses of cutaneous metastases with unknown primary (n=39).

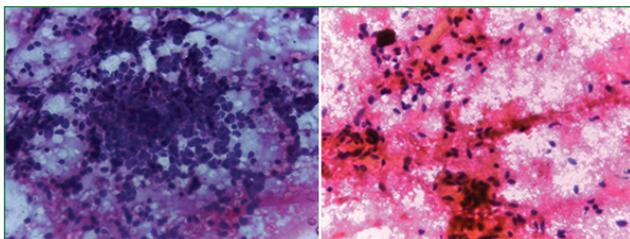
Histopathological Type and Site of Primary Tumour		Site of Cutaneous Metastasis						
Morphological Diagnosis	Site of Primary Tumour	Scalp	Face	Arm	Chest	Back	Abdomen	Thigh
Adenocarcinoma	Lung	1		1	8	1	1	
	Breast	2		3	6		1	
	Stomach				1		5	
	Ovary			1			1	
	Pancreas	1	1					
	Bile duct						1	
Squamous cell carcinoma	Lung	1		1	2	3		1
	Oral cavity		1	1	2			
	Cervix						2	
	Penis				1			
	Leg							1
Poorly Differentiated Carcinoma	Cervix						1	
	Ovary						1	
	Lung	1			3			
	Nasopharynx		2				1	
Small Cell Carcinoma Lung				2		1	1	
Follicular Carcinoma Thyroid					1	2	1	1
Hepatocellular Carcinoma					1		1	
Malignant Melanoma Foot							1	3
Adrenocortical Carcinoma		1						
Renal Cell Carcinoma							1	
Transitional Cell Carcinoma Bladder		1		1				
Rhabdomyosarcoma Back			1					
Ewing Sarcoma Chest Wall		1						
Sebaceous Carcinoma Cheek			1					
Malignant Fibrous Histiocytoma Back					1			
Gastro Intestinal Stromal Tumour Jejunum							1	

**[Table/Fig-2]:** FNA diagnoses of subjects with known primary tumour [n=89]

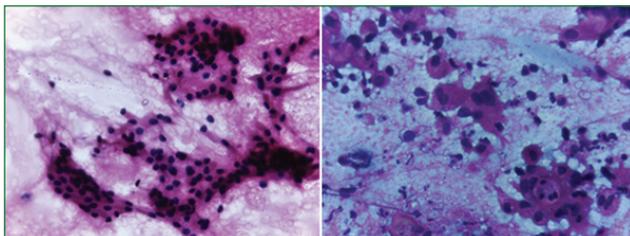
primary site was lung and breast [Table/Fig-3a]. Other malignancies noted were squamous cell carcinoma [Table/Fig-3b], small cell carcinoma lung [Table/Fig-4a], Melanoma [Table/Fig-4b], follicular carcinoma thyroid [Table/Fig-5a] and



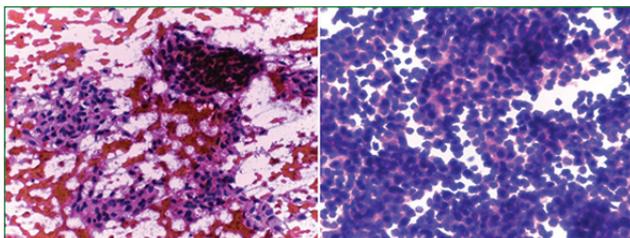
**[Table/Fig-3]:** a) Cytology of infiltrating duct carcinoma showing clusters of cells with moderate pleomorphism and absence of bipolar bare nuclei (Papanicolaou stain-200X); b) Squamous cell carcinoma-smear showing cells with orangeophilic cytoplasm and hyperchromatic nuclei in a dirty background (Papanicolaou stain-200X).



**[Table/Fig-4]:** a) Small cell carcinoma- smear showing cells with scant cytoplasm, stippled nuclei (Papanicolaou stain-400X) and; b) Melanoma- smear showing spindle shaped cells with occasional cells showing intracytoplasmic melanin pigment (Papanicolaou stain-200X).



**[Table/Fig-5]:** a) Follicular carcinoma- smear showing cells with moderate cytoplasm, arranged as microfollicular pattern (Papanicolaou stain-400X); b) Transitional cell carcinoma-smear showing cells with elongated cytoplasmic projections, nuclear pleomorphism and intracytoplasmic vacuolations (Papanicolaou stain-400X).



**[Table/Fig-6]:** a) Gastro Intestinal Stromal Tumour-Smear showing cells with spindle shaped nucleus (Papanicolaou stain-200X); b) Ewing's sarcoma-smear showing cells with scant cytoplasm, round nucleus with fine chromatin (Papanicolaou stain-400X)

hepatocellular carcinoma. Other less common malignancies were sebaceous carcinoma, renal cell carcinoma, nasopharyngeal carcinoma, transitional cell carcinoma [Table/Fig-5b], gastrointestinal stromal tumour [Table/Fig-6a], ewing sarcoma [Table/Fig-6b], rhabdomyosarcoma and malignant fibrous histiocytoma.

## DISCUSSION

Cutaneous metastases 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. 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. A total of 128 subjects were included in our study.

The age group of patients in the study ranged from 15 to 90 years. In a similar study done by David O et al., [7], the mean age of the subjects ranged from 32-89 years. 64.1% of the total subjects were males. Similar studies also demonstrated higher incidence of the metastatic deposits in males [8].

69.5% of subjects had a previous primary tumour. The predominant sites involved were chest wall and abdomen (including umbilicus). This was in concordance with similar results observed by study done by Aldret S et al., where the predominant sites were scalp, abdomen and chest wall [9,10]. The predominant type of tumour observed was adenocarcinoma, as seen in similar studies done by Mendonca B et al., [11]. The pattern of spread is related to the mode of dissemination and the anatomic proximity of the primary neoplasm [12]. Chest wall involvement is usually seen in lung and breast carcinomas, while abdominal wall is mostly involved in gastric malignancies.

Squamous cell carcinomas are the second common type of tumour which causes tumour deposits. In this study, 22 cases of squamous cell carcinoma were seen, of which 6 were without a known primary tumour. Most common site of primary squamous cell carcinoma was lung [13]. In women, squamous cell carcinoma from cervix are also seen, and abdominal wall is the common site [14].

In younger subjects, the tumours seen were Ewing sarcoma [15] and nasopharyngeal carcinoma.

Among subjects with unknown primary, the predominant tumour in our study was adenocarcinoma. The most commonly involved site was abdominal wall [16].

In case of metastases with unknown primary, Fine needle aspiration studies can aid in suggesting the possible site of primary tumour by analysing the clues which suggest possible sites. Signet ring cells with intracellular mucin suggests stomach as the primary site. Invasive carcinomas of breast may show cell balls or cells arranged as single file. Cells with microfollicular pattern suggest thyroid as the primary site. Melanoma shows cells with prominent nucleoli, spindle cells or plasmacytoid cells. Transitional cell carcinoma shows

cells with prominent cytoplasmic elongations and dense cytoplasm. Moreover, immunocytochemistry can be done on cytology smears to determine the possible site of primary tumour [17].

Cytological examination, thus, has a role in diagnosing unknown primary tumours and is important prognostically as skin metastasis usually has a dismal prognosis.

## LIMITATION

The main limitation of this study was the smaller sample size. About one third of subjects had unknown primary tumour. The primary site of tumour in these patients were not obtained by clinical and radiological work up.

## CONCLUSION

Cutaneous metastases are seen with a wide variety of internal malignancies. Prompt recognition of the histopathological type of malignancy is essential as it can provide clues on cases without a known primary. Age and site of metastatic lesion, and cytological appearances can provide clues on primary tumour. This can be assisted with techniques like special stains and immunocytochemistry. In cases with known primary, cytological studies can indicate progression of disease or relapse of the tumour. Cytological study is cheap and cost effective, and can be a useful substitute for other costly or invasive procedures.

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