



Original Article

Metastatic cutaneous and subcutaneous lesions: Analysis of cases diagnosed on fine needle aspiration cytology

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ABSTRACT

Background: Cutaneous and subcutaneous metastasis from an underlying primary, indicates a dismal outcome for patients. It is appropriate to use fine needle aspiration cytology as a minimally invasive method for diagnosis. This study emphasises the role of fine needle aspiration cytology in diagnosing metastatic skin nodules.

Materials and methods: This was a retrospective study in which the record of all patients subjected to fine needle aspiration cytology from April 2008 – Nov 2010 in the Department of Pathology, Tribhuvan University Teaching Hospital, were reviewed. Of 5,927 patients, 19 cases diagnosed as metastatic skin lesions were included in the study.

Results: Out of 19 patients with metastatic skin nodules, 9 patients had metastasis simultaneously with the primary and 8 cases were previously diagnosed. All metastases were from internal solid organ tumours with male to female ratio of 1.7:1. Lung carcinoma was the most common to metastasis in both sexes which included adenocarcinoma (5 cases) and squamous cell carcinoma (6 cases). Common sites for cutaneous/subcutaneous metastasis were the chest wall (9 cases) followed by abdomen (4 cases) and scalp (3 cases).

Conclusion: Fine needle aspiration cytology can diagnose a variety of skin lesions which may be supportive in diagnosing a metastasis in cases with known primaries or it may offer a clue to underlying malignancy in unsuspected cases.

INTRODUCTION

Cutaneous and subcutaneous metastases from an underlying primary is a rare occurrence.¹ Autopsy study based data indicate an approximate range of 0.8-5%.²⁻⁴ Metastasis can occur at any age, but the incidence rises with advancing age, especially after the fifth decade of life.³ Though most of the metastases occur in patients with known primary,

they may rarely be the first clinical manifestation leading to recognition of the underlying condition.

Skin metastases are believed to be due to systemic spread and they represent terminal stage of malignant disease with limited survival period.⁵ As an alternative to performing biopsies, fine needle aspiration cytology (FNAC) is a minimally invasive method, that can be used to diagnose these cases.

FNAC is important in easily accessible and palpable lesions.

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It is a relatively simple, rapid and inexpensive procedure with high sensitivity and specificity in evaluating these cases.⁶⁻⁸

This study emphasises the role of FNAC in diagnosing cutaneous and subcutaneous metastases in cases with known and unknown primaries.

MATERIALS AND METHODS

This was a retrospective study in which the record of all patients subjected to FNAC from April 2008 – Nov 2010 in the department of pathology, Tribhuvan University Teaching Hospital, were reviewed. Of 5,927 patients who underwent aspiration during this period, 19 cases diagnosed as metastatic cutaneous and subcutaneous lesions were included in the study.

Samples were obtained using the conventional method of FNAC. Dry smears were stained by Giemsa and wet smears were prepared by Papanicolaou method.

RESULTS

From 5,927 patients subjected to FNAC, 19 (0.3%) cases were diagnosed as cutaneous/subcutaneous metastases from known or unknown primary site. Common sites of metastasis with regards to sex are displayed on Table 1. Primary site and FNAC diagnosis in cases with known primary is demonstrated on Table 2 whereas FNAC diagnosis of unknown primary along with site of metastasis is displayed in Table 3.

DISCUSSION

Cutaneous metastasis is considered a ‘grave’ sign for majority of the patients with malignancy.^{2,9} Development of such lesions may indicate failure of ongoing therapeutics or recurrence of a cancer assumed to have been previously eradicated or, rarely, it may be the first sign of unsuspected malignant tumour.¹⁰

In our studies, 19 (0.3%) out 5927 cases subjected to

Table 1: Fine needle aspiration sites of cutaneous nodules.

Site of metastases	Males	Females	Total
Chest wall	6	3	9
Abdomen	4	0	4
Scalp	1	2	3
Sacral region	0	1	1
Thigh	1	0	1
Forehead	0	1	1
Total	12	7	19

Table 2: Metastases to skin in cases with known primary.

Primary tumour	Morphological diagnosis	Sex		Sites of metastases	No of cases	No of nodules	
		M	F			Single	Multiple
Lung	Squamous cell carcinoma	6	0	Chest	7	9	2
				Scalp	2		
	Adenocarcinoma	1	4	Forehead	1		
				thigh	1		
Kidney	Renal cell carcinoma	2	0	Abdomen	2	0	0
Breast	Infiltrating ductal carcinoma	0	1	Chest	1	0	0
Colon	Adenocarcinoma	1	0	Abdomen	1	0	0
Stomach	Adenocarcinoma	1	0	Abdomen	1	0	0
Brain	Small round cell tumour	0	1	Scalp	0	1	1

Table 3: Cutaneous metastases in cases with unknown primary.

No of cases	FNA diagnosis	Sex	Site of metastasis	No of lesion
1	Squamous cell carcinoma	F	Sacral region	Single
1	Adenocarcinoma	M	Chest wall	Multiple

FNAC, presented with metastatic skin lesions, out of which two cases were with unknown primaries. In a similar study by Sharma et al¹¹, cutaneous metastases was 0.12% with unknown primary.

The patients were represented by 12 males and 7 females with age range of 40-85 years (mean 63 years) in males and 1.5-76 years (mean 47.3 years) in females. Most of the studies report a higher incidence of cutaneous metastasis in males rather than females.⁵⁻⁶ Age ranges in other studies is variable with 2-74 years in one study⁵ and 32-89 years in another study⁶.

Cutaneous metastases are mostly multiple and rarely solitary. However in this study, multiple lesions or multiple site involvement was seen in only 4 cases (21%). Sharma et al reported multiple site involvement in 8 (9%) of the cases.¹¹

Spread to regional skin is via lymphatics whereas subsequent spread to distant sites is due to hematogenous spread.⁶ Skin metastases usually occur close to the site of primary tumour, that is, chest in lung carcinoma, abdominal wall in gastrointestinal malignancies and lower back in renal carcinomas.¹²

Chest and abdomen followed by head and neck are the most common sites of metastases reported in the literature.⁸ In this series also, chest and abdomen followed by scalp were the common sites of metastases.

Incidence of tumours metastasizing to skin correlates with the frequency of occurrence of primary malignant tumours in each gender.⁸ Other studies have found lung as the common source of primary in males followed by large intestine, melanoma, renal cell carcinoma and carcinoma of the oral cavity. Breast followed by colon, melanoma, lung, ovary and sarcoma have been found to be more common primaries in females.^{10, 12}

In our study lung was the most common primary both in males (7 cases) and females (4 cases) followed by kidney (2 cases), colon (1 case) and stomach (1 case) in males and breast (1 case) and brain (1 case) in females. Metastasis from the brain was seen in 1.5 year old female with neuroblastoma diagnosed as metastatic small round cell tumour on scalp FNAC. Metastases from haematological malignancy have been noted in other studies.¹¹

In 17 cases with known primaries or those who were diagnosed simultaneously at the time of FNAC, cytological features correlated with the primary neoplasm. Adenocarcinoma from various organs was the commonest to metastasized, similar to a study by Bansal et al.⁵

Metastatic lesions should be distinguished from primary adnexal tumours and primary squamous cell carcinoma of

the skin. Presence of pools of extracellular mucin, signet cells and three dimensional papillae represent metastases rather than primary in case of adenocarcinoma.¹¹ Metastases is usually located in the deeper dermis and subcutis and they are free from the overlying skin.¹¹

Based on this, 2 cases were labelled as metastatic lesions but the primary was unknown at the time of FNAC and the patients were lost to follow up. Immunocytochemistry was not available to us which could have been helpful in identifying the primary. Schwartz reported cutaneous metastases presenting as first sign of malignancy commonly seen with cancers of lung, kidney and ovary.¹³ In some studies, cases of cutaneous metastases failed to find primary site even after autopsies.¹⁴⁻¹⁵

CONCLUSION

FNAC can diagnose a variety of skin lesions which may be supportive in diagnosing a metastasis in cases with known primaries or it may offer a clue to underlying malignancy in unsuspected cases.

REFERENCES

1. Brady LW, O' Neill EA, Farber SH. Unusual sites of metastases. *Semin Oncol* 1977;4:59-64.
2. Reingold IM. Cutaneous metastases from internal carcinoma. *Cancer* 1966;19:162-8.
3. Rolz-Cruz G, Kim CC. Tumour invasion of skin. *Dermatol Clin* 2008;26:89-102.
4. Krathen RA, Orengo IF, Rosen T. Cutaneous metastasis: A metanalysis of data. *South Med J* 2003;96:164-7.
5. Bansal R, Patel T, Sarin J, Parikh B, Ohri A, Trivedi P. Cutaneous and subcutaneous metastasis from internal malignancy. An analysis of cases diagnosed by fine needle aspiration. *Diagn Cytopathol* 2010;[epub ahead of print].
6. Gattuso P, Castelli MJ, Reyes CV, Reddy V. Cutaneous and subcutaneous masses of the chest wall. A fine needle aspiration study. *Diagn cytopathol* 1996;15:374-6.
7. David O, Kluskins L, ReddyV, Gattuso P. Malignant cutaneous and subcutaneous abdominal wall lesions: A fine needle aspiration study. *Diagn Cytopathol* 1998; 19:267-9.
8. Srinivasan R, Ray R, Nijhawan R. Metastatic cutaneous and subcutaneous deposits from internal carcinoma: an analysis of cases diagnosed on fine needle aspiration. *Acta Cytol* 1993;37:894-8.
9. Gottlieb J, Schermer DR. Cutaneous metastasis from carcinoma of colon. *JAMA* 1970;213:2083.
10. Pak HY, Foster BA, Yakota SB. The significance of cutaneous metastasis from visceral tumors diagnosed by fine needle aspiration biopsy. *Diagn Cytopathol* 1987;3:24-9.
11. Sharma S, Kotru M, Yadav A, Chugh M, Chawla A, Makhija M. Role of fine needle aspiration cytology in evaluation of cutaneous metastasis. *Diagn Cytopathol* 2009;37:876-80.
12. Brownstein MH, Heliwig EB. Patterns of cutaneous metastases. *Arch Dermatol* 1972;105:862-8.
13. Schwartz RA. Cutaneous metastatic disease. *J Am Acad Dermatol* 1995;33:161-82.

14. Didolkar MS, Fanous N, Elias EG, Moore RH. Metastatic carcinomas from occult primary tumors. A study of 254 patients. *Ann Surg* 1977;186:625-30.
15. Osteen RT, Kopf G, Wilson RE. In pursuit of unknown primary. *Am J Surg* 1978;135:494-7.