Case Report

Fine needle aspiration cytology-a boon in the diagnosis of cutaneous metastasis

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Abstract

Cutaneous metastasis is an uncommon manifestation of visceral malignancy (0.8-5%) indicating a grave prognosis. Cutaneous metastasis manifests as nodules, ulceration, cellulitis or fibrotic processes. Lesions are solitary or multiple frequently found near the primary tumour. The most frequent organs presenting with cutaneous metastasis are breast, skin (melanoma), lung, colon, stomach, upper aerodigestive tract, kidney and the uterus. On histopathology they can be classified as adenocarcinoma, squamous cell carcinoma, undifferentiated carcinoma and other miscellaneous types. The present series involves 3 cases of cutaneous metastasis diagnosed on FNAC. First case of osteosarcoma presenting as swelling in femoral region, second case as swelling in cervical region from cancer oesophagus and third case presented with swelling over sternum from an unknown primary. FNAC is the first line diagnostic procedure for diagnosis of cutaneous metastasis. It is inexpensive, simple and fast diagnostic tool confirming clinical diagnosis.

Keywords: Cutaneous metastasis, Fine Needle Aspiration Cytology, Osteosarcoma deposits

Introduction

Cutaneous metastasis is an uncommon manifestation of visceral malignancy (0.8-5%) indicating a grave prognosis [1-4]. Metastasis can occur at any age, but the incidence rises with advancing age, especially after the fifth decade of life [5]. 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 [1,5]. Fine Needle Aspiration Cytology (FNAC) is an excellent non-invasive method for early diagnosis of subcutaneous nodules, which in the presence of characteristic cytomorphological features obviates the need for more invasive methods and surgery [6,7].

The present series involves 3 cases of cutaneous metastasis diagnosed on FNAC. First case of osteosarcoma presenting as swelling in femoral region, second case as swelling in cervical region from cancer oesophagus and third case presented with swelling over sternum from an unknown primary.

Case Reports

A 21 Years male, known case of osteosarcoma of right proximal tibia operated with above knee amputation 2 years back presented with a painless swelling in the right groin for 15 days. On examination, subcutaneous swelling was present in the right femoral region measuring 2x2 cm firm, mobile and non-tender.

On FNAC, the smears showed malignant tumour cells in singles and fragments which were highly pleomorphic with round to oval eccentric hyperchromatic irregular nucleus, 1-2 nucleoli and moderate amount of cytoplasm. Many anaplastic tumour giant cells with occasional osteoclastic giant cells were seen. Scanty homogenous eosinophilic material was seen in a haemorrhagic background along with few lymphocytes. Hence the diagnosis of cutaneous deposits of osteosarcoma was made.

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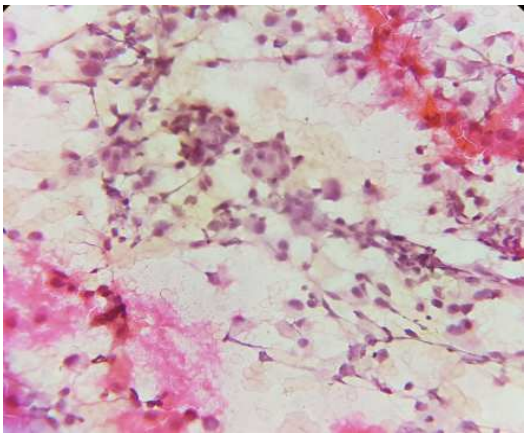

Figure-1: Microscopy showing tumour cells in fragments with highly pleomorphic nucleus (10X – Pap Stain)

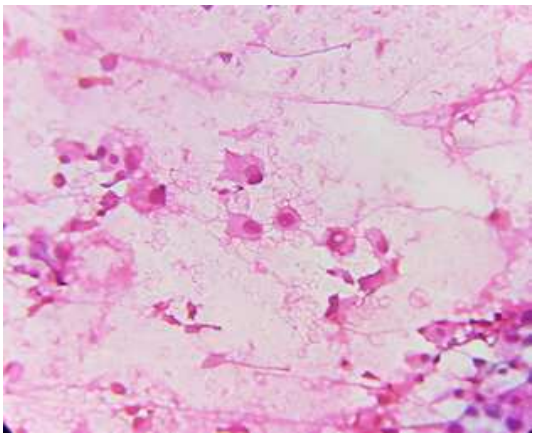

Figure-2: Microscopy showing round to oval eccentric hyperchromatic irregular nucleus (40X – H & E)

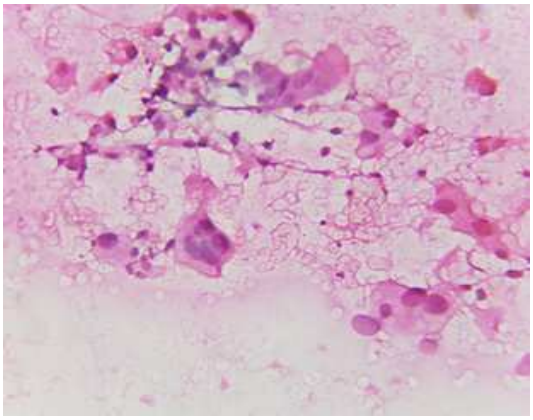

Figure-3: Microscopy showing osteoclastic giant cell (40X – H & E)

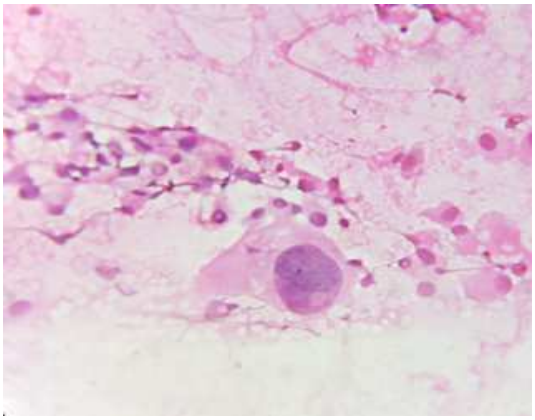

Figure-4: Microscopy showing anaplastic tumour giant cell (40X – H & E)

A 50 years male presented with a swelling in upper part of chest along with pain abdomen for 1 month. On examination, swelling was present over the upper end of sternum measuring 3x3 cm cystic- firm, fixed to the underlying structures and muscle and was tender. On USG abdomen, hepatomegaly with well-defined hypoechoic lesions was noted. On FNAC of the swelling, smears showed features of adenocarcinoma deposits with atypical cells arranged in groups, vague acini and singles. These cells had an increased N:C ratio with large nucleus with coarse nuclear chromatin, 1-3 nucleoli and moderate amount of cytoplasm.USG guided FNAC of the liver mass showed features of papillary adenocarcinoma deposits.

Figure-5: Clinical presentation

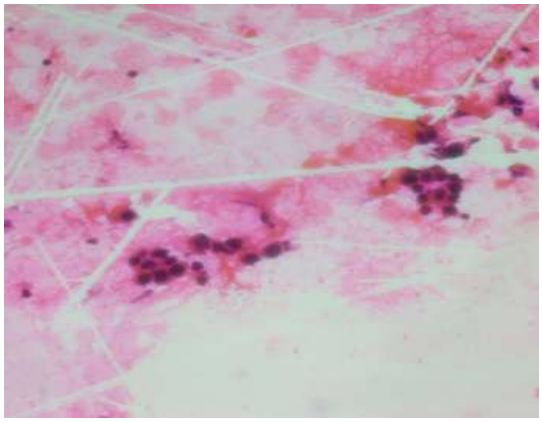

Figure-6: Microscopy showing with atypical cells arranged vague acini (10X – H & E)

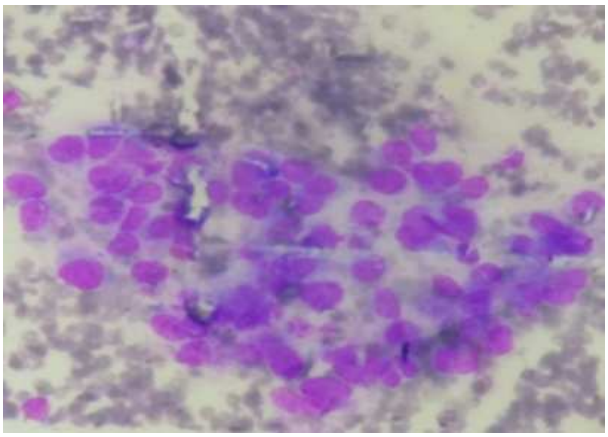

Figure-7: Microscopy showing with atypical cells arranged in groups with cells with large nucleus with coarse nuclear chromatin, 1-3 nucleoli and moderate amount of cytoplasm (40X – Wright's stain)

A 62 years male known case of CA oesophagus on chemotherapy presented with swelling over right side of neck since one year. On examination, a hard-irregular swelling measuring 5x3 cm was present over right supraclavicular and cervical region which was fixed and nontender. On FNAC, smears were cellular showing malignant tumour cells in groups, acini and singles. These cells were pleomorphic with pleomorphic nucleus, coarse nuclear chromatin, prominent nucleoli and moderate amount of cytoplasm. Background was hemorrhagic with mixed inflammatory cell infiltrates. Diagnosis of cutaneous adenocarcinoma deposits was made.

Figure-8: Clinical presentation

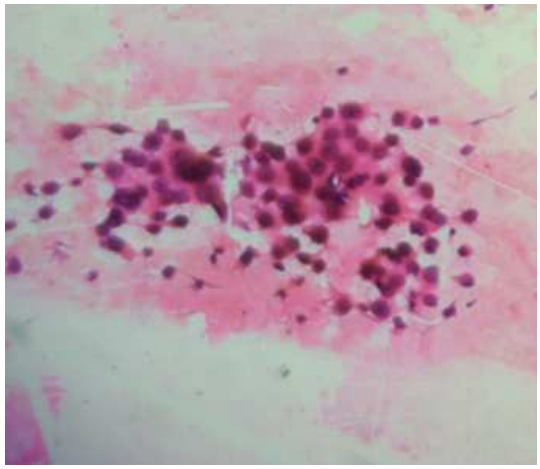

Figure-9: Microscopy showing malignant tumour cells in groups with pleomorphic nuclei (40X – H & E stain)

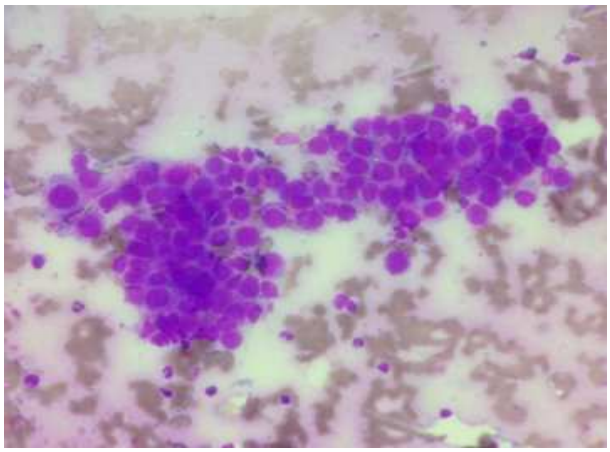

Figure-10: Microscopy showing malignant tumour cells in groups with pleomorphic nucleus, coarse nuclear chromatin, prominent nucleoli and moderate amount of cytoplasm (40X – Wright's stain)

Discussion

Cutaneous metastasis is an uncommon manifestation of visceral malignancy (0.8-5%). It manifests as nodules, ulceration, cellulitis or fibrotic processes. Lesions are solitary or multiple frequently found near the primary tumour [1-4].

Chest and abdomen is the commonest site of cutaneous metastases reported in the literature followed by head and neck [1]. The most common malignancies to metastasize to skin are lung followed by Gastro-intestinal tract, melanoma, Renal Cell Carcinoma and carcinoma of oral cavity in males. Breast followed by colon, melanoma, lung,ovary and sarcoma are the common primary sites in females [1,3]. Age ranges between 2-76 years [1,8].

On Histopathology, they can be classified as adeno-carcinoma, squamous cell carcinoma, undifferentiated carcinoma and other miscellaneous types [9]. Adenocar-cinoma from various organs is the commonest to metastasize to skin [1,4].

Spread to regional skin is via lymphatics whereas subsequent spread to distant sites is due to hemato-genous spread [1,10]. 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 [1,11].

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 adenocar-cinoma. Metastases is usually located in the deeper dermis and subcutaneous tissue and theyare free from the overlying skin [1,4]. In our study, the deposits presented as cutaneous lesions.

They are of diagnostic importance as they can be the first manifestation of visceral malignancy[12]. In our study, one case was of osteosarcoma deposits and 2 cases were of adenocarcinoma deposits.Osteosarcoma tends to extend to the surrounding tissues and metastasis through bloodstream occurs to lung, other bones, pleura and heart [2]. Cutaneous metastasis is rare. Early investigation of such nodules with fine needle aspiration cytology and inclusion of multiagent chemotherapy as part of the treatment protocol is necessary in all patients with osteosarcoma[13]. Cutaneous metastasis is a finding indicating progressiveness of the disease [14]. Cutaneous metastasis although rare is the first presenting sign in occult primary. It is usually a sign of terminal stage of malignant disease. Cytology helps in early diagnosis and prompt initial evaluation and treatment [15]. Schwartz reported cutaneous metastases presenting as first sign of malignancy commonly seen with cancers of lung, kidney and ovary [16]. In some studies, cases of cutaneous metastases failed to find primary site even after autopsies [1,17,18].

Lymph node metastasis occurs early in cancer oesophagus and is the main reason for treatment failure. Blood borne metastasis can be seen in liver, lung and adrenal glands [2]. Oesophagus as the primary site of tumour with metastasis to the skin is a very rare phenomenon with a reported incidence less than 0.5% and it is the oesophageal adenocarcinoma, which is more prone to be associated with cutaneous metastases [19].

Conclusion

FNAC can be supportive in diagnosing metastasis in cases with known primaries or it may offer a clue to underlying malignancy in unsuspected cases [20].

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References

1. Karki S, Pathak R, Manandhar U, Koirala S. Metastatic cutaneous and subcutaneous lesions: Analysis of cases diagnosed on fine needle aspiration cytology.Journal of Pathology ofNepal.2011;1(1):37-40

2. Yasin SB, Bashir N, Khan SP. Evaluation of Metastatic Cutaneous Lesions on Fine Needle Aspiration Cytology: A Five-Year Study. Annals of Applied Bio-Sciences. 2017 Feb 27;4(1):A62-66.

3. Erdemır AT, Atılganoglu U, Onsun N, Somay A. cutaneousmetastases from gastric adenocarcinoma. Indian journal of dermatology. 2011;56(2):236-37.

4. Sharma S, Kotru M, Yadav A, Chugh M, Chawla A, Makhija M.Role of fine-needle aspiration cytology in evaluation of cutaneous metastases. Diagn Cytopathol. 2009 Dec;37(12):876-80. doi: 10.1002/dc.21119.

5. Rolz-Cruz G, Kim CC. Tumor invasion of the skin. Dermatol Clin. 2008 Jan;26(1):89-102, viii.

6. Geramizadeh B, Marzban S, Karamifar N, Omidifar N, Shokripour M, Mokhtarh MR. Diagnosis of subcutaneous metastatic deposits by fine needle aspiration. J CytolHistol. 2012;3:151.

7. David O, Kluskens L, Reddy V, Gattuso P. Malignant cutaneous and sub cutaneous abdominal walllesions: a fine-needle aspiration study. Diagn Cytopathol. 1998 Oct;19(4):267-9.

8. Bansal R, Patel T, Sarin J, Parikh B, Ohri A, Trivedi P.Cutaneous and subcutaneous metastases from internal malignancies: an analysis of casesdiagnosed by fine needle aspiration. Diagn Cytopathol. 2011 Dec; 39 (12): 882-7. doi: 10.1002/dc.21485. Epub 2010 Nov 2.

9. Fyrmpas G, Barbetakis N, Efstathiou A, Konstantinidis I, Tsilikas C. Cutaneous metastasis to the face from colon adenocarcinoma. Case report. Int SeminSurg Oncol. 2006 Feb 2;3:2. doi: 10.1186/1477-7800-3-2.

10. Gattuso P, Castelli MJ, Reyes CV, Reddy V. Cutaneous and subcutaneousmasses of the chest wall: a fine-needle aspirationstudy. Diagn Cytopathol. 1996 Dec; 15(5):374-6.

11. Brownstein MH, Helwig EB. Patterns of cutaneousmetastasis. Arch Dermatol. 1972 Jun; 105 (6): 862-8.

12. Mazumder G, Nath S. Role of fine needle aspiration cytology (FNAC) in the diagnosis of skin and sub-cutaneous lesions: a retrospective analysis. J Evolution Med Dent Sci 2016;5(5):292-95. doi: 10.14260/ jemds/ 2016/63.

13. Ouseph MM, Sharan GK, Sharma P, Rathi AK, Shyama J, Singh K, Bahadur AK. Osteosarcoma with cutaneous metastases. A case report. Acta Cytol. 2007 Jan-Feb; 51(1):102-6.

14. Shaheen O, Ghibour A, Alsaid B. Esophageal Cancer Metastases to Unexpected Sites: A Systematic Review. Gastroenterology research and practice. 2017; 2017: 1657310. doi:10.1155/2017/1657310

15. Rosai J, Ackerman L. Rosai and Ackerman's surgical pathology. 10th ed. London: Mosby Elsevier; 2010.

16. Schwartz RA. Cutaneous metastatic disease. J Am Acad Dermatol. 1995Aug;33(2 Pt 1):161-82;quiz 183-6.

17. Didolkar MS, Fanous N, Elias EG, Moore RH. Metastatic carcinomas from occultprimarytumors. A study of 254 patients. Ann Surg. 1977 Nov; 186 (5): 625-30.

18. Osteen RT, Kopf G, Wilson RE. In pursuit of the unknownprimary.Am J Surg. 1978 Apr;135(4):494-7.

19. Chauhan A, Sharma AK, Sunita BS. Cutaneous-metastasis as primarypresentation in unsuspected carcinomasophagus: Report of two cases. J Cancer Res Ther. 2015 Jul-Sep;11(3):667. doi: 10.4103/0973-1482. 143347.

20. Mendonca B, Fernandes H, Rahim S, Ali S, Hegdekatte N. Cytology- a boon in the diagnosis of cutaneous and subcutaneous metastatic nodules. International Journal of Recent Trends in Science and Technology. 2015 March; 14(2): 455-57.

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