Case Report
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Cutaneous Metastasis in a Case of Adenocarcinoma of the Lung: A Cytological Diagnosis

Gajender Singh, Ashima Batra♦, Sant Prakash Kataria, Hemant Yadav, Rajeev Sen

Department of Pathology, Pt. B D Sharma PGIMS Rohtak, Haryana, India

Abstract

Subcutaneous metastatic nodules are an uncommon first sign of underlying cancer. Cutaneous metastasis occurs in 0.8% to 4% of all cancer patients and less than 5% in those with lung cancer. These metastases are usually single or multiple painless nodules that may be mobile or fixed. Cutaneous metastases from the lung are not very common and indicate a worse prognosis. The limited literature on skin metastases from a primary lung suggests that if other extracutaneous metastases exist, median survival does not exceed three months; however, if the skin is the only site of metastatic disease, survival can reach ten months. Fine needle aspiration cytology is an excellent noninvasive method for early diagnosis of subcutaneous nodules, which in the presence of characteristic cytomorphology obviates the need for more invasive methods and surgery. Once diagnosed, the aim is to start treatment as soon as possible before widespread visceral metastases occur. Although the response to chemotherapy is poor, possibly due to poor blood supply to the skin, monitoring response to chemotherapy is easier when such lesions are present.

We hereby describe the case of a 38-year-old male who presented with a mass in the right lung along with a nodule on his scalp. Fine needle aspiration cytology from both sites revealed cytological features of adenocarcinoma.

Keywords: Adenocarcinoma, Lung, Metastasis, Cutaneous, Fine needle aspiration cytology

Introduction

Cutaneous metastasis is an uncommon presentation of an underlying malignancy, having an incidence of 0.8%– 4%.[1] Although rare, it is of diagnostic importance because it may be the first manifestation of an undiscovered internal malignancy and is a poor prognostic sign.[2] The most common site for skin metastasis in lung cancer is the chest and abdominal wall.[3] Lung cancer patients who present with cutaneous metastasis have a poor prognosis, with a mean survival of approximately five months, the

♦Corresponding Author:
Ashima Batra, MD
Senior Resident, Department of Pathology, Pt. B D Sharma PGIMS Rohtak, Haryana, India
Tel: 9991477127
Email: drashimabatra@gmail.com

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maximum survival being 10 months. Due to the aggressive nature of lung cancer with cutaneous metastasis, both chemotherapy and radiation therapy may be effective only as a palliative treatment.[4]

Case report

A 38-year-old male presented with shortness of breath, cough, hemoptysis and chest pain for the past one month. He was a non-smoker and non-alcoholic with an insignificant family history. General examination showed the presence of pallor, clubbing, pedal edema and engorged jugular veins. There was no significant lymphadenopathy. On chest examination, wheeze was audible on the right side and air entry was decreased on the left side. A nodule that measured 2×2 cm was present on the scalp in the right parietal region. The external surface of the nodule was smooth and erythematous (Figure 1).

Hemoglobin was 6.6 gm%. Serum lactate dehydrogenase (LDH) was elevated (1250 IU). The remainder of the biochemical investigations was within normal limits. A chest X-ray revealed opacity in the middle lobe of the right lung (Figure 2). Contrast enhanced computerized tomography (CECT) of the chest showed a large lobulated predominantly hypodense mass lesion in the right upper and middle lobes medially that measured 9.8×7.1×8.8 cm. The lesion extended superiorly to the aortic arch with medial invasion and compression of the superior venacava. The trachea was also displaced medially with invasion of the right carina and upper lobe bronchus (Figure 3).

Endobronchial biopsy could not be performed because of the high risk of bleeding. Endobronchial fine needle aspiration (FNAC) and FNAC from the scalp nodule were performed. The smears from both the sites showed similar morphology. The smears revealed atypical cells arranged in clusters, monolayered sheets, papillaroid configurations and a focal glandular pattern (Figure 4a and 4b). These cells had a high N:C ratio, granular chromatin with prominent nucleolization in a few cells and a moderate amount of vacuolated cytoplasm. Focally intracellular and extracellular mucin was also evident (Figure 4c).

A diagnosis of adenocarcinoma lung with metastasis to the scalp was made. Metastatic work-up that included Ultrasound (USG) of the abdomen and bone scan did not reveal any other organ involvement. The patient was started on palliative chemotherapy (combination of premetrexed and cisplatin) and radiotherapy. The patient is still under follow-up with relief from his

Figure 1. Clinical photograph showing a smooth, 2×2 cm erythematous nodule on the scalp in the right parietal region.

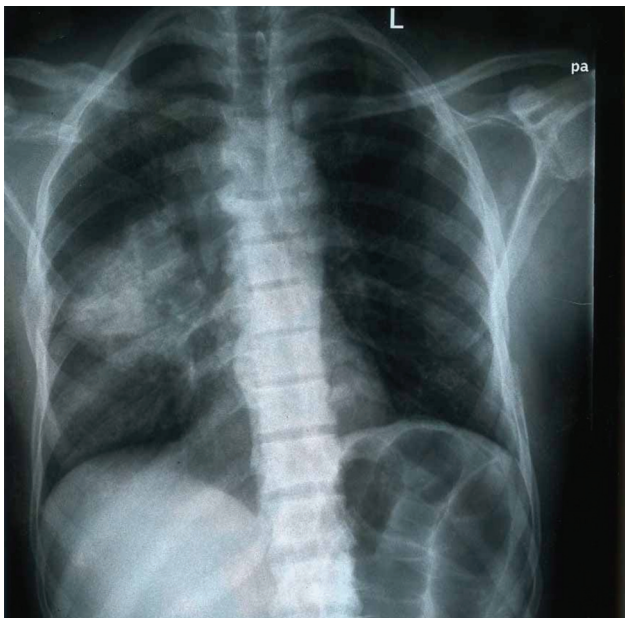

Figure 2. Chest X- ray revealing opacity in the middle lobe of the right lung.

symptoms at two months of follow-up.

Discussion

Cutaneous metastasis may be the first manifestation of an underlying lung tumor or both primary and metastasis are sometimes diagnosed at the same time.[2] Common sites of cutaneous metastasis are the chest, back, abdomen, scalp and neck; occurrence on the upper and lower extremities is rare.[5] Cutaneous metastases from malignancy can arise either following surgery, simultaneously with the primary tumor or can present as the first manifestation of an unknown primary. They are mostly multiple and rarely solitary.[1] It is more common in men than women.[3] One study of 2080 cases of lung cancer found skin metastasis in 1.5% of the patients.[6] In another series of 56 patients with skin metastases from lung malignancies, 7% developed a metastatic skin nodule before the primary tumor was diagnosed, and 16% had a cutaneous metastasis diagnosed simultaneously with the primary lung tumor.[7] In addition, lung cancer in the upper lobe has a higher tendency to develop cutaneous metastasis.[4]

Cutaneous metastases from lung cancer do not have a characteristic presentation. However, they are often described as nodular, mobile or fixed, hard or flexible, single or multiple, and painless. Their color varies from flesh-colored, red, pink, purple, or bluish black. Over the scalp, it can present with alopecia (alopecia neoplastica).[8]

The patient in our case presented with a solitary nodule on his scalp, which is a rare presentation. The nodule was detected simultaneously with the primary tumor which was located in the upper and middle lobes of the right lung.

Tumor spread to regional skin is thought to be via the lymphatics; subsequent spread to distant sites is due to hematogenous spread.[1] It is important to distinguish subcutaneous metastasis from other subcutaneous nodules like skin adnexal lesions, soft tissue tumors and inflammatory lesions.[2] Though it is difficult to differentiate metastatic adenocarcinoma from primary cutaneous adenocarcinoma, the presence of pools of extracellular mucin, signet cells and three-dimensional papillae indicate metastasis rather than a primary lesion.[1]

Most of these cases represent terminal phase of the disease. It is appropriate to utilize FNAC as a minimally invasive tool for diagnosis in these cases, thereby obviating the need for a biopsy.[1] Patients with metastatic skin lesions usually have

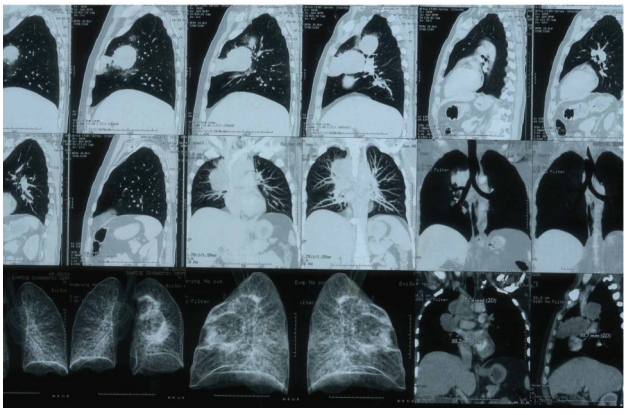

Figure 3. Contrast enhanced computerized tomography (CECT) of the chest that shows a large lobulated predominantly hypodense mass lesion in the right upper and middle lobes, measuring 9.8×7.1×8.8 cm. The extended superiorly up to the aortic arch, with invasion and compression of the superior venacava medially. The trachea was also displaced medially with invasion of the right carina and upper lobe bronchus.

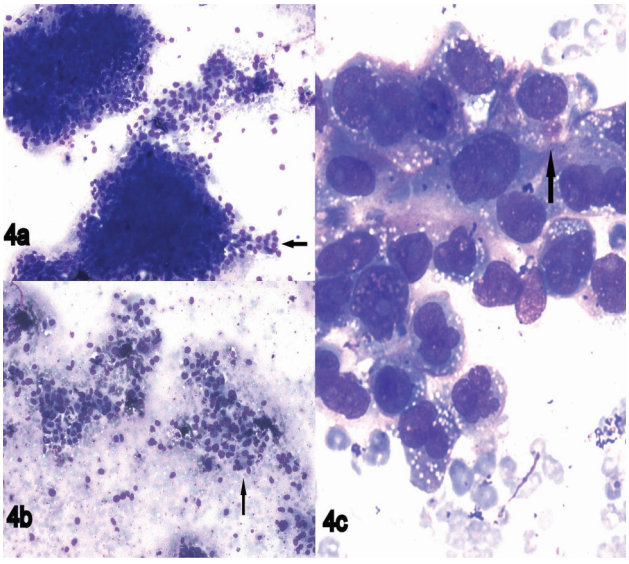

Figure 4. (a,b) Microphotograph revealing atypical cells arranged in clusters, monolayered sheets, papillaroid configurations and focal glandular pattern (highlighted by arrow; Leishman; 100×).(c) These cells had a high N:C ratio, granular chromatin with prominent nucleolization in a few cells, moderate amount of vacuoalated cytoplasm and foci of intracellular mucin (highlighted by arrow; Leishman; 400×).

other internal visceral metastases and a poor prognosis. Patients who present with skin lesions earlier have a lower survival rate than the patients who develop skin metastasis later in the disease course.[4]

Since patients of lung carcinoma who present with skin metastases represent a late stage, treatment is usually unsatisfactoryand palliative. Treatment options include surgery, chemotherapy and radiotherapy. Surgical excision is indicated when tissue is needed for histological examination or when metastases cause functional or cosmetic inconvenience or significant pain. Palliative radiotherapy may be useful for bleeding or painful lesions. Chemotherapy has less effect on skin metastases than on primary tumor, probably because of poorer blood supply to skin. Chemotherapeutic agents that have been attempted with variable success rates include adriamycin, vincristine, cisplastin, cyclophosphamide, etoposide and carboplastin.[8]

Conclusion

Cutaneous deposits from lung cancer are important to diagnose as they are a sign of an aggressive malignant tumor. A skin lesion developing in a patient of lung cancer must be investigated for metastasis for staging and treatment planning. Moreover, a noninvasive technique such as the FNAC can be of great value in such cases.

Conflict of Interest

No conflict of interest is declared.

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