Cutaneous metastases of lung cancer

Rammurti Kamble, Lalit Kumar, Vinod Kochupillai, Atul Sharma, MS Sandhoo, BK Mohanti

Summary
The reported incidence of skin metastases from lung cancer varies from 2.8–7.5%. In the present study 8.7% of patients had skin metastases, with head and neck being the most common sites, nodular lesions the most common, and adenocarcinoma the most frequent histology. Although most patients develop these lesions during the course of a known progressive disease, they may be the presenting manifestation of a primary tumour in the lung. The occurrence of skin lesions in lung cancer announces an ominous prognosis. The response to chemotherapy is poor, possibly due to poor blood supply to the skin; monitoring response to chemotherapy, however, is easier when such lesions are present.

Keywords: radiation therapy, lung cancer, cutaneous metastases.

The commonest tumour to metastasise to the skin in males is lung cancer with a reported incidence of 2.8–7.5%.^{1,2} Although the anterior trunk, and head and neck regions are reported to be common sites, skin metastases may arise anywhere on the body.³

Lung cancer metastasises to almost every organ. Frequent extrathoracic sites include liver, adrenals, bones, brain and kidney.⁴ Skin metastases, though uncommon, can be the sole manifestation of the disease, and could be a sensitive monitor of response to chemotherapy.⁵

Cutaneous metastatic lesions due to lung cancer are physically indistinguishable from those due to carcinoma originating elsewhere in the body. They occur with sufficient frequency and at any site, that lung cancer should always be considered in the differential diagnosis of patients with nodular skin lesions.⁶

Materials and methods

Medical records of 491 patients with lung cancer at the Institute Rotary Cancer Hospital, All India Institute of Medical Sciences, New Delhi, were studied. Of these 43 patients were found to have cutaneous metastases. Their site, duration, histology and response to therapy were assessed. Skin metastases due to primaries other than lung were excluded. Those with subcutaneous metastases involving lymph nodes or direct extension to the skin of the chest wall were excluded from the analysis, as were

patients with incomplete medical records. Skin nodules were either biopsied or subjected to fine needle aspiration cytology (FNAC) in all but three patients.

Results

A total of 43 patients were found to have cutaneous metastases (34 men and nine women). Ages ranged from 30 to 85 years (mean 54.5). All except seven patients were smokers. The distribution of the skin lesions were variable. Scalp, head and neck were the most common sites (49%), followed by chest (37%), lower limb (5%), and upper limb (2%). Three patients (7%) had metastases to both head/neck and chest/abdomen (box 1). Skin nodules were the most common manifestation (figures 1 and 2); 11 patients had multiple lesions (box 1). Skin ulceration was not common, only one patient having ulceration on the top of the nodule. Black discolouration of skin was noted in three patients. The size of the nodules was 2–10 cm, average 4 cm. The lesions were firm, nodular, mobile, and large enough to be noted by patients themselves.

Skin metastases were the first clinical manifestation of disease in five patients; preceding endobronchial symptoms by 4–6

Institute Rotary Cancer Hospital, All India Institute of Medical Sciences, New Delhi 110029, India
Department of Medical Oncology
R Kamble
L Kumar
V Kochupillai
A Sharma
Department of Radiodiagnosis
MS Sandhoo
Department of Radiation Therapy
BK Mohanti

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Characteristics of cutaneous metastases in 43 patients	
<i>Distribution of skin lesion</i>	
• scalp, head and neck	21(49%)
• chest, abdomen (trunk)	16 (37%)
• scalp, head-neck and chest abdomen	3 (7%)
• lower limb	2 (5%)
• upper limb	1 (2%)
<i>Description of cutaneous lesions</i>	
• number of nodules	solitary 32 (73%) multiple 11 (27%)
• size of nodule	2–10 cm (av 4 cm)
• firm mobile nodule without overlying skin changes	31 (72%)
• firm mobile nodule with tense and shiny skin	8 (19%)
• nodule with black discolouration of skin	3 (7%)
• ulcerated nodule	1 (2%)
<i>Histology</i>	
• adenocarcinoma	18 (45%)
• squamous cell tumour	14 (30%)
• small cell tumour	8 (17%)
• uncharacterised lung tumour	3 (8%)

Box 1

Figure 1 Chest wall nodules, prominent venous dilatation can be seen, due to superior vena cava obstruction

Figure 2 Two firm, mobile, metastatic nodules without skin changes in a patient with small cell carcinoma

months. Adenocarcinoma was the most common histology (box 1). Poorly differentiated tumours (77%) had a greater propensity for metastases than well-differentiated tumours (23%). Four patients had mucin-secreting adenocarcinoma on FNAC/biopsy of skin lesion. These patients were investigated to rule out gastrointestinal primaries.

Most patients (65%), had metastases to more than one organ system including liver, bone marrow, adrenals, brain. However 15 patients (35%), had no detectable lesion other than skin. Bone marrow metastases were seen in five (12%) and cranial metastases in four (9%) patients.

Most patients were treated by radiation therapy alone (42%), while five patients (12%) received both radiation therapy and chemotherapy. Patients on chemotherapy alone (21%) did show initial appreciable reduction in the size of cutaneous nodule, but later these lesions progressed. None had complete disappearance of the skin nodule. Chemotherapy consisted of either a combination of cisplatin and VP-16 or cyclophosphamide, adriamycin and vincristine. Radiation therapy of painful skin lesion was given to only one patient. Eleven patients (25%) were offered only supportive palliative therapy. The mean survival of these 43 patients following the appearance of the skin nodule was four months. Only two survived for more than one year.

Discussion

Dermatological manifestations of lung cancer as a part of the paraneoplastic syndrome are seen in less than 1% of cases. Various neoplastic and paraneoplastic dermatological manifestations are described in box 2.

Skin metastases of a lung cancer are not uncommon.^{2,9} In males, the commonest tumour to metastasize to the skin is lung cancer.³ They usually appear in patients with known lung cancer signifying aggressive tumour behaviour. They are rarely a presenting manifestation of an occult primary pulmonary tumour,^{6,10} but any unexplained fresh skin lesion should be investigated to rule out lung cancer.

Dermatological manifestations of lung cancer

Paraneoplastic

- acanthosis nigricans
- pruritis
- pigmentation
- necrotic migratory erythema⁷
- triple palm⁸
- dermatomyositis
- migratory thrombophlebiti
- acquired ichthyosis

Neoplastic

- direct extension to the chest wall and skin
- metastatic – usually a cutaneous nodule without overlying skin changes

Box 2

Summary points

Cutaneous metastases from lung cancer are frequent; any fresh skin lesion in a smoker should lead to suspicion of a primary in the lung, even in asymptomatic patients

Box 3

Cutaneous metastases are a sign of an aggressive, poorly differentiated, malignant tumour. Of the various histologies, adenocarcinomas are the most common.⁵ Four patients in the present study had mucin-secreting adenocarcinomas which are known to follow an aggressive course.

The appearance of a skin nodule provides a valuable tool for monitoring response to chemotherapy.⁵ The response, however, may be unrelated to the primary tumour, as skin lesions may be less sensitive to chemotherapy due to the relatively poorer blood supply of the skin. After an initial partial response to chemotherapy all lesions in our study progressed and even in patients with small cell lung cancer, a complete response at the cutaneous metastatic site was not observed.

Lung cancer patients with cutaneous secondaries are not likely to be cured. Such metastases signify a fast-growing aggressive primary in the lung. They aid rapid diagnosis when they are the sole manifestation of an occult primary. These patients have an extremely poor prognosis, despite aggressive combinations of chemotherapy and/or radiation therapy. Generally, therefore, only palliative chemotherapy is offered, with or without radiation. The continuation of palliative treatment needs to be balanced between toxicity and benefits obtained. Radiation therapy to the metastatic skin lesion is not indicated unless associated with severe pain or bleeding, which is not common.

We conclude that scalp, head/neck, and chest are the most common sites for skin metastases in lung cancer. They usually present as a cutaneous nodule and their response to

chemotherapy is generally poor; due partly to the poor blood supply of the skin. Their recognition, however, is important; every fresh cutaneous lesions should lead to suspicion of a bronchogenic carcinoma, particularly if the

patient is a smoker. All such lesions should be biopsied. We also conclude that a cutaneous metastases is the most common dermatological manifestation of lung cancer.

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