

# Scalp metastasis from squamous cell carcinoma of lung

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## Abstract

We report a case of a 53-year-old man with a solitary nodular growth on the scalp in the right temporal region, noted during his hospital admission for bilateral knee replacement. A chest X-ray revealed a large circumscribed opacity in the left lung field. Bronchoscopy revealed a tumour at the carina. Histology of biopsies from the bronchoscopy and the scalp lesion showed an identical moderately differentiated squamous cell carcinoma. The patient survived 2.5 months after the onset of symptoms. While skin metastasis is recognised but rare in primary lung cancer, metastasis to the scalp is particularly unusual.

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## Keywords

Scalp metastasis; skin metastasis; lung cancer; squamous cell carcinoma.

## Case report

On 12 May 2004, a 53-year-old single Chinese man who had been suffering from severe osteoarthritis was admitted to a university teaching hospital for bilateral knee replacement. On admission, there was a large painless solitary irregular growth measuring  $6.3 \times 5.5$  cm in the scalp overlying the right temporal region (Fig. 1(A)). The patient estimated it to be about 8 months old. On the following day, the patient was noted to have a productive cough and fever. A chest X-ray showed patchy consolidation in the left lung field. The knee replacement operation was cancelled due to presumed pneumonia and the patient was transferred to a medical ward for further management.

On further enquiry, it was discovered that the patient had been coughing for the past 2 weeks producing yellow and occasionally blood-stained sputum. Apart from some weight loss over the last 6 months, he did not complain of anorexia or chest pain. He had previously worked as a wood painter and had smoked over 60 pack-year cigarettes (40 a day for 30 years). He otherwise had no significant medical or family history. His temperature was  $39.1^{\circ}\text{C}$ . His blood results were as follows: haemoglobin 10.0 g/dl; total white cell count  $16.3 \times 10^{-3}/\mu\text{l}$  with neutrophilia; ESR 120 mm/h; C-reactive protein 288.2 mg/l; sodium 127 mmol/l; albumin 22 g/l; alkaline phosphatase 262 U/l; and total (corrected) calcium 3.2 mmol/l. The rest of the serum electrolytes and liver enzymes were within normal levels. Sputum staining and cultures were repeatedly negative for Acid Fast Bacilli and other organisms. A knee X-ray showed changes consistent with severe osteoarthritis.

The patient responded well to treatment with intravenous followed by oral amoxicillin/clavulanic acid for 7 days and intravenous pamidronate for 3 days as evidenced by resolution of respiratory symptoms and near normalisation of the blood

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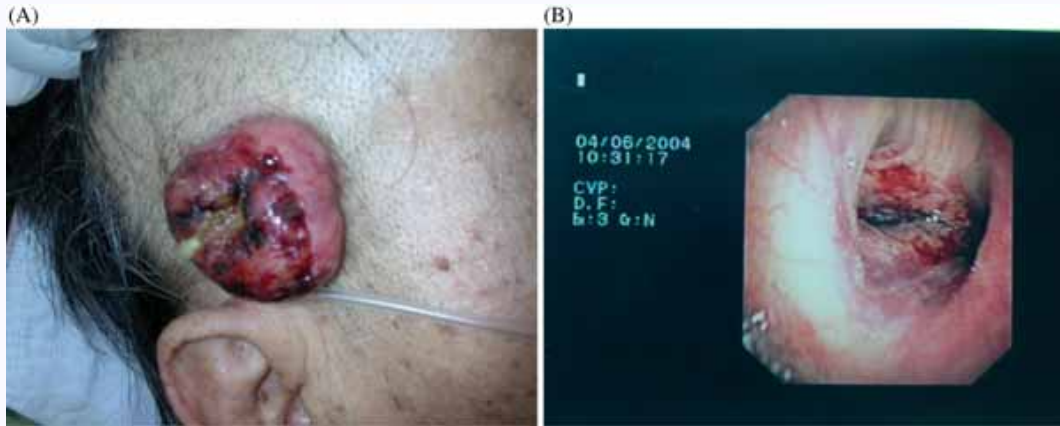
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**Fig. 1.** Photograph of (A) a large irregular bulging growth with ulcerated bleeding surface over the scalp of the right temporal region. The surface area of the growth was  $6.3 \times 5.5$  cm (hair was shaved to provide a better view of the growth); (B) bronchoscopic view showing tumour involvement of an enlarged main carina with bleeding. Both left and right main bronchial orifices were partially occluded by the spread of the tumour.

results. However, a repeat chest X-ray after 2 weeks showed a large circumscribed opacity in the left lung field. On 1 June 2004, a punch biopsy of the scalp lesion was performed, and 3 days later, a flexible bronchoscopy was carried out, showing tumour involvement of the carina with compression of the right and left main bronchial orifices (Fig. 1(B)). The procedure was complicated by profuse bleeding from the biopsy site requiring intubation and ventilation. About 6 h later the patient was successfully extubated and made an uneventful recovery from this acute episode. The histology from the two biopsy specimens was identical, showing a moderately differentiated squamous cell carcinoma, with evidence of individual cell keratinisation (Fig. 2(A, B)). In view of the involvement of the carina, scalp metastasis, hypercalcaemia and generally poor health, the patient received palliative treatment alone and was discharged home on 9 July 2004. He passed away peacefully at

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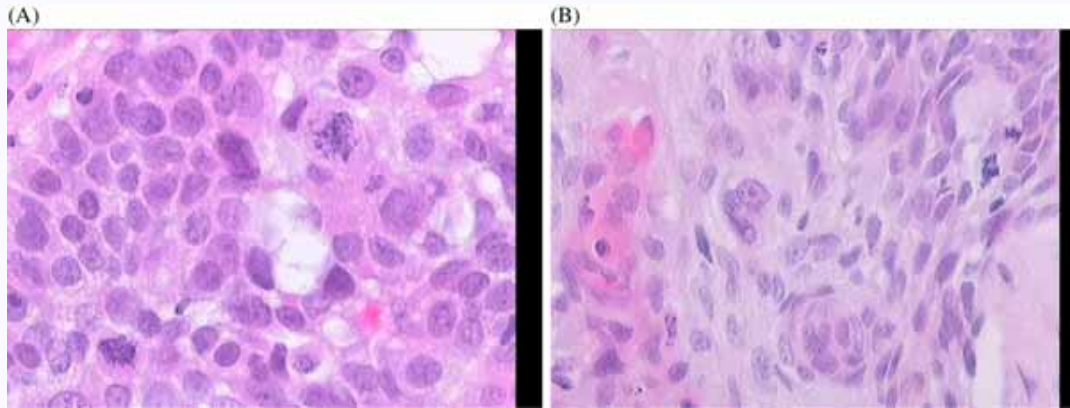
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**Fig. 2.** Histology of biopsy specimens from (A) scalp growth and (B) main carina lesion showing identical moderately differentiated squamous cell carcinoma with individual cell keratinisation.

home 2 days later. The interval between the onset of respiratory symptoms and death was 2.5 months.

## Discussion

Cutaneous metastasis in primary lung cancer is unusual, with an incidence estimated at less than 5%<sup>[1-3]</sup>. In a recent meta-analysis of six studies containing over 20 000 patients with cutaneous metastasis<sup>[4]</sup>, the overall incidence from all visceral malignancies was estimated to be 5.3%. Specifically, lung cancer, colorectal cancer, renal cancer, ovarian cancer, and bladder cancer, had similar rates of between 3.4 and 4.0% for skin metastasis.

The commoner sites for skin metastasis in lung cancer are the chest and abdominal wall<sup>[1-4]</sup>. This is presumably due to the high body surface area of these regions and also the nearness to the site of the primary neoplasm<sup>[4]</sup>. Scalp metastasis, however, is unusual in

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primary lung cancer, and to the best of our knowledge, there has not been a specific report of this. According to the meta-analysis mentioned earlier<sup>[4]</sup>, scalp metastasis constituted 6.9% of all cutaneous metastasis from various visceral malignancies. In some malignancies, such as renal cell carcinoma, there appears to be a predilection for the scalp whenever the skin is involved<sup>[5]</sup>. Scalp metastasis has also been reported in unlikely primary cancers such as cervical carcinoma<sup>[6,7]</sup>. The reasons proposed for a tendency to scalp metastasis include the high degree of vascularity, immobility, and the warmth of this site<sup>[8,9]</sup>.

According to the case series published on lung cancer<sup>[1-3]</sup>, the commoner histological types that metastasise to skin are large cell carcinoma and adenocarcinoma, whilst epidermoid or squamous cell carcinoma shows the least tendency for skin metastasis<sup>[2]</sup>. Our case, however, was one of squamous cell carcinoma. Most studies indicate that the overall prognosis in patients with skin metastasis from primary lung cancer is poor, with median survival rates of less than 6 months<sup>[1-3]</sup>. Taking into account the estimated duration of the scalp lesion, our patient probably survived up to 10 months. In summary, we reported an unusual case of scalp metastasis from squamous cell carcinoma of lung in a 53-year-old man. This case may represent the first in the literature.

## Teaching points

The appearance of a subcutaneous mass anywhere in the body should alert the physician to the possibility of a primary growth. Secondary implants in the scalp may come from a number of primary tumours; squamous carcinoma of the lung is a rare source but should be considered whilst hunting for the primary tumour.

## Acknowledgement

The authors wish to thank the relatives of the patient for their permission to publish this case.

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