

Bilateral axillary metastasis from a primary ethmoidal squamous cell carcinoma

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Abstract

The development of infra-clavicular lymph node metastasis from head and neck squamous cell carcinoma is an uncommon event. We present a rare case of bilateral axillary nodal metastasis that developed in a patient previously treated for a primary ethmoidal squamous cell carcinoma. To our knowledge, there have only been five case reports in the English literature, accounting for a total of 10 patients, which documented a clinically apparent metastasis to axillary lymph nodes from various head and neck malignancies. Significantly however, the simultaneous ipsilateral and contralateral lymphatic spread of disease from a tumour in the para-nasal sinus, so as to involve bi-axillary nodes, has not been previously reported. We discuss the possible pathogenesis and the prognostic significance of this manifestation.

Key words: Neoplasm Metastasis; Head And Neck Neoplasms; Axilla; Ethmoid Sinus; Carcinoma, Squamous

Case report

A 55-year-old, insulin-dependent diabetic man presented with epistaxis and bloody, mucoid rhinorrhoea. He smoked 15 cigarettes a day but denied alcohol intake; significantly, he had been employed as a wood-worker. A provisional diagnosis of a left nasal polyp was made following nasendoscopic examination. A subsequent biopsy showed this to be an undifferentiated squamous cell carcinoma (SCC). A computed tomography (CT) scan revealed a small lesion arising from the lateral wall of the left nasal cavity, extending into the left maxillary sinus. There was suspicious cervical lymphadenopathy identified at levels III–V.

Subsequently, the patient underwent left lateral rhinotomy and tumour resection together with a left modified radical neck dissection, with preservation of the spinal accessory nerve. Histology of the surgical specimens revealed a completely excised, poorly differentiated SCC arising from a background of squamous carcinoma in situ. Metastatic disease was noted in 15 of the 29 lymph nodes in the neck dissection. All nodes in level V were replaced by tumour. In view of these findings, the patient underwent a course of post-operative radical radiotherapy (55 Gy; three-field plan to left maxilla and two-field plan to neck).

Eleven months after initial presentation, the patient was found to have loco-regional recurrence in the left ethmoid sinus and the left neck. This disease relapse was deemed inoperable and he underwent a further course of radiotherapy with concomitant chemotherapy (5-fluorouracil and cisplatin).

Four months later, the patient complained of lethargy and general malaise. Examination revealed a right supra-clavicular node, bilateral axillary nodes, dilated upper

chest and neck veins, and right upper limb oedema, suggestive of superior vena cava and/or axillary vein obstruction. Fine needle aspiration cytology of the right axillary mass confirmed a poorly differentiated SCC. No abnormality was seen on plain chest X-ray, but a CT scan confirmed the clinical findings. Additionally, a diffuse, suprasternal mass was identified, appearing to be largely confluent with the bi-axillary masses and also extending into the lateral thoracic wall (Figure 1). The patient received a single dose of palliative radiotherapy to the right axilla but died less than three weeks later, 16 months after initial presentation.

Discussion

Head and neck SCCs in general follow a predictable pattern of metastasis based on their site of origin and histo-morphological features.^{1,2} The most common site for lymphatic spread of head and neck SCC are the cervical nodes.² The development of distant metastasis is based on haematogenous spread to the lungs, liver and bones.³ Axillary lymph node metastasis from SCC of the head and neck remains an uncommon occurrence.⁴

Axillary lymph node metastases have been documented at autopsy in 2–9 per cent of patients with head and neck cancer.⁵ This may underestimate the true incidence of axillary spread as impalpable nodes are not routinely dissected at autopsy.⁶ To our knowledge, there have only been five case reports in the English literature, outlining 10 patients who developed clinically apparent axillary lymphadenopathy arising from head and neck SCCs^{1,4,7–9} (Table I).

Numerous mechanisms have been proposed to explain atypical spread of cutaneous and mucosal aero-digestive tract malignancy into the axillary region. It is noteworthy

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Accepted for publication: 18 October 2005.

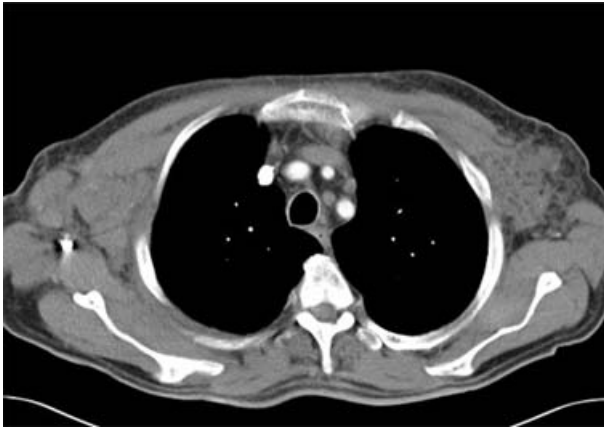


FIG. 1

Computed tomography scan showing extensive, confluent, bilateral axillary lymphadenopathy and small mediastinal nodes.

that breast and gastric carcinoma can present as Virchow's (supra-clavicular) nodes. This suggests that pathways must exist between supra and infra-clavicular sites and potentially allow bi-directional flow.

Woolgar² suggested that the presentation of axillary lymphadenopathy may be the result of long-range pathways and 'fast tracking' to sites beyond the boundaries of conventional neck dissection. Also, it has been shown that malignant cells may 'pepper' or present as micrometastasis within the nodes and, as a result, they may escape histological surveillance within the cervical lymphatic surgical specimen. Alavi *et al.*¹ hypothesized that, following surgery and/or radiotherapy, 'neo-lymphatic pathways' are recruited through collateral channels, affording the opportunity for bi-directional flow patterns. These pathways tend not to follow any predictable pattern of drainage. The formation of post-treatment lymphatic anastomoses with infra-clavicular pathways may potentiate spread to infra-clavicular lymphatic sites, thereby involving the axillary nodes. Lymphography studies have demonstrated that the axilla can become the major lymphatic drainage site from the antero-lateral neck following radical neck dissection and radiotherapy.⁹

It has also been postulated that the tumour itself can produce an alteration in lymphatic drainage, resulting in unusual dissemination of disease.⁵ There also remains the possibility of a second primary tumour arising in the upper aero-digestive tract and subsequently spreading to the axilla, especially in the presence of local field change.

It is very difficult to predict the likelihood of distant metastasis in head and neck cancer. The potential for

distant metastasis could be related to the site, stage and histology of the tumour and to the presence of cervical metastases. Primary tumours of advanced T stage, that are poorly differentiated and/or localized in the hypopharynx, oropharynx and oral cavity, have been associated with the highest incidence of distant metastases.³ The patient's nodal status also has important prognostic implications. Woolgar *et al.*⁵ reported that distant metastasis is observed in less than 10 per cent of patients with N₀ and N₁ neck nodes. In contrast, 30 per cent of patients who have N₂ and N₃ positive neck nodes have evidence of distant disease. According to Koch,⁹ the patients at high risk of axillary metastasis are those with massive neck metastasis and those with delayed metastasis involving inferior nodes in the root of the neck. Typically, they are patients who have been previously treated successfully with either resection and/or radiotherapy.

Rayatt *et al.*⁸ described a case in which the primary oral lesion was localized in the left mandible yet the patient presented with a lump in the contralateral axilla. These authors suspected that the disease had spread into the right neck and then through the cervico-axillary canal into the right axilla. Given the rarity of primary ethmoidal tumour metastasis to the opposite side of neck,¹¹ our case is unusual in that the patient developed intercurrent ipsilateral and contralateral metastatic disease in the neck. Thus, his subsequent presentation with bi-axillary metastatic disease makes this a unique case. We could not find another case report describing this phenomenon, in which the primary lesion was located in the para-nasal sinus.

In general, head and neck cancer patients with distant metastasis have a dismal prognosis. Calhoun *et al.*¹² reported an average survival of 4.3 months following diagnosis and stated that survival for more than one year was rare. However, Oo *et al.*⁴ described a patient who survived three and a half years following axillary dissection for metastatic disease. Similarly, Nelson and Sisk⁷ reported a patient who survived 25 years after successful treatment for axillary metastasis.

Conclusion

There has been an increasing incidence of distant metastasis from head and neck cancers.¹³ Whilst local and regional control improves, distant metastasis may be seen as an important source of long term morbidity and mortality.¹⁴ Although axillary metastasis is unusual, recognition of this phenomenon is crucial in the examination of patients and their subsequent treatment planning. Some authors now recommend routine palpation of axillary lymph nodes of high risk patients during follow-up examinations.⁹ We feel that this is critical, especially given the fact that

TABLE I

CASE REPORTS: HEAD AND NECK CANCER WITH DISTANT METASTASIS TO AXILLARY LYMPH NODES

Author(s)	Year	Cases (n)	Primary tumour site	Previous treatment	Outcome
Nelson and Sisk ⁷	1994	1	Larynx	RND and RT	Died of disease (after 25 yr)
Alavi <i>et al.</i> ¹	1999	2	Retromolar (both cases)	RND and RT	1 Patient disease-free at 1 yr 1 Patient died of disease
Koch ⁹	1999	3	Larynx (all 3 cases)	RND and RT	1 Patient lost to follow up 2 Patients died of disease
Oo <i>et al.</i> ⁴	2004	3	Parotid Floor of mouth Tongue	RND and RT (FOM patient RND only)	1 Patient (FOM SCC) alive with disease at 1.3 yr Other 2 patients died of disease
Rayatt <i>et al.</i> ⁸	2004	1	Mandible	RND and RT	Died of disease

RND = radical neck dissection; RT = radiation therapy; FOM = floor of mouth; SCC = squamous cell carcinoma

early detection may improve survival in a small number of select cases.

- **The development of infra-clavicular lymph node metastasis from head and neck squamous cell carcinoma is an uncommon event. This report describes a rare case of bilateral axillary nodal metastasis that developed in a patient previously treated for a primary ethmoidal squamous cell carcinoma**
- **The simultaneous ipsilateral and contralateral lymphatic spread of disease from a tumour in the para-nasal sinus to involve bi-axillary nodes has not been previously reported. The pathogenesis and the prognostic significance of this manifestation are discussed**

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Dr S Islam takes responsibility for the integrity of the content of the paper.
Competing interests: None declared
