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Invited review

Management of regional metastatic disease in head and neck cutaneous malignancy.1. Cutaneous squamous cell carcinoma

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Abstract

This overview is the first of 2 articles on the current evidence for management of the neck and parotid in cutaneous cancers of the head and neck. In this paper we discuss cutaneous squamous cell carcinoma (SCC) and review the latest evidence for management of the regional nodes.

Keywords: Cutaneous squamous cell carcinoma; Neck dissection; Lymphatic metastasis; Radiotherapy

Introduction

In this first paper of 2 giving an overview of the current evidence for management of the neck and parotid in cutaneous cancers of the head and neck, we discuss regional management of cutaneous squamous cell carcinoma (SCC); in the second we discuss cutaneous malignant melanoma.[1] The single most important prognostic determinant in both diseases is nodal status.[2]

In both papers we outline the risk factors for metastasis from the primary tumour and discuss controversies over prognostic staging. Much of the understanding about lymphatics in the head and neck relates to mucosal SCC (SCC of the head and neck), whereas skin cancer has different patterns of spread through the superficial lymphatics, including the parotid nodes.

We present current evidence for the roles of imaging and sentinel node biopsy in patients with no sign of metastasis, and discuss imaging and tissue sampling of those with suspected clinical involvement of regional nodes. We also outline evidence for the surgical and adjuvant management of patients with some metastases with reference to ongoing research in this field.

It is interesting to note that much of the current research on skin cancer relates to populations not in the UK, and particularly in cutaneous malignant melanoma, to sites of disease that are not in the head and neck.

Non-melanoma skin cancer

The incidence of non-melanoma skin cancer is rising and is estimated to do so until 2040.[3] This group of malignant skin tumours includes basal cell carcinoma (BCC) which is the most common human cancer to affect white people globally, cutaneous SCC which accounts for 20% of deaths from skin cancer,[4] and the much rarer Merkel cell carcinoma.

Metastatic BCC is exceedingly rare with roughly 300 cases reported, and most arise from neglected giant BCC or

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Table 1
High risk factors in cutaneous squamous cell carcinoma (SCC).

Size: >2 cm
Depth: >2 mm
Primary site: Scalp, ear, or lip
Recurrence
Histological findings: Poorly differentiated, perineural spread, lymphovascular spread
Immunosuppression

basosquamous carcinoma.[5] Merkel cell carcinoma has high rates of recurrence and metastasis; it is not considered further in this article. Over 80% of cutaneous SCC affects the head and neck, and around 10 000 cases are estimated to occur annually in the UK.[6] However, this figure may be considerably higher because of regional and historical variations in the inclusion of non-melanoma skin cancer in cancer registries.

Primary tumours: risk factors (Table 1)

Over the last decade there has been a move to subdivide primary cutaneous SCC into low and high-risk types, as they behave differently in terms of regional metastasis, and this affects prognosis.[7] Most cutaneous SCC are small (less than 2 cm), thin (less than 2 mm), well differentiated, and previously untreated, and nodal metastasis is rare. They can be considered low risk and local treatment is curative.[6] Treatment is often given by dermatologists, and as large numbers of cases have been excluded from head and neck surgical practice, considerably higher rates of recurrent and metastatic disease are being reported in series from surgical institutions. Several large pathological studies have shown that there are specific high risk factors for metastasis to regional lymph nodes, and the associated prognosis for 5-year survival deteriorates to 46% in patients with regional nodal involvement.[8]

Overall, cutaneous SCC may metastasise in up to 5% of patients in the UK,[9] but in high risk types the rates have been shown to be much higher: 33% in those with poorly differentiated lesions, 45% in those with lesions more than 4 mm thick, and 47% in cases of perineural invasion.[10] Immunosuppression after transplant, and concurrent haematological malignancies are well known to increase the incidence and risk of cutaneous SCC,[4,6] and recently, biological treatment with anti-tumour necrosis factor (TNF) has been shown to have a similar effect. [11]

Staging (Table 2)

The 7th edition of the staging classification by the American Joint Committee on Cancer (AJCC) now incorporates risk in the T-staging for cutaneous SCC.[12] The presence of 2 or more high risk factors gives a T1 tumour a T2 designation.[13] However, immunosuppression is not included, although it is widely recognised to be a poor prognostic factor.[14] Efforts have been made in this edition to create greater compatibility between the staging of cutaneous SCC and that of SCC of the head and neck. Nodal burden has been shown to be an important factor in decreasing survival in patients with cutaneous disease,[15] and nodal staging now takes account of the number and the size of nodal disease to correlate with staging in other head and neck cancers.

Table 2
American Joint Committee on Cancer (AJCC) 2009. Staging of cutaneous squamous cell carcinoma and other cutaneous carcinomas.

Primary tumour (T): cutaneous SCC or basal cell carcinoma:	
TX	Primary tumour cannot be assessed
T0	No evidence of primary tumour
Tis	Carcinoma in situ
T1	Tumour up to 2 cm in greatest dimension with less than 2 high-risk features
T2	Tumour 2 cm or more in greatest dimension or any size of tumour with 2 or more high-risk features*
T3	Tumour with invasion of maxilla, mandible, orbit or temporal bone
T4	Tumour with invasion of skeleton (axial or appendicular) or perineural invasion of base of skull
Regional lymph nodes (N) Distant metastasis (M)	N and M staging follow the same AJCC categories as head and neck SCC

* High-risk features: >2 mm thickness, Clark level ≥ IV, perineural invasion, ear or non-hair-bearing lip, poorly differentiated or undifferentiated.

The main omission is the status of the parotid. Cutaneous SCC commonly metastasises to the parotid, as the first echelon nodes are often located here, and the scalp and pinna are the commonest sites for primary lesions. Patients with involved parotid nodes have a high incidence of clinical (26%) or occult (35%) neck disease,[16] and this has led to a call for an alternative classification which takes parotid status into account, and uses P0 and P+ to denote whether the parotid nodes are involved.[16,17] In both these papers, N+ is used to denote nodal involvement in the neck.

Superficial lymphatics of the head and neck

Much of the evidence regarding lymphatic drainage of the skin of the head and neck comes from studies of sentinel node biopsy in cutaneous malignant melanoma. Drainage patterns can vary, and in over 30% of cases they can differ from the classic anatomical understanding of the area.[18] It is likely, but not well established, that this could also apply in cutaneous SCC.

Superficial lymphatic pathways from the skin can drain to facial, parotid, postauricular, and occipital nodes, and nodes superficial to the sternocleidomastoid, particularly the external jugular node. Connections between the superficial lymphatics and between the superficial and deeper lymphatics are unpredictable. Cutaneous SCC of the external pinna in particular has been shown to have variable and unpredictable patterns of regional spread, but despite this variability, some common patterns are recognised (Fig. 1).[10]