An audit of CT chest surveillance following oral cancer treatment

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Abstract

Computed tomography (CT) of the chest is an integral part of the staging of patients with oral cancer. It identifies metastases, synchronous pulmonary primaries, and detects small nodules of indeterminate character that require a follow-up scan. We aimed to find out how many patients with small nodules had had subsequent scans, and the outcome of those who did. Between 2010 and 2013, 413 patients with oral squamous cell carcinoma (SCC) were treated with curative intent or were actively monitored at the Merseyside and Cheshire Regional Surgical Head and Neck Unit. A total of 324 (78%) had CT at diagnosis. The scans of 246 were clear, metastases were detected in 4, and 51 showed abnormalities. Forty-nine of the patients with abnormalities were recommended for further interval scans but only 20 (41%) actually had them. Further pathological findings were found in 11 (increase in the size of the nodule n = 2; metastatic disease n = 5; and primary pulmonary tumour n = 4). A substantial number of patients did not have the recommended follow-up scans and potentially serious disease was found in some who did. As a result of this audit we have changed the process regarding the booking of CT surveillance scans, and we now check periodically that they have been done. The audit will be repeated to include other sites in the head and neck.
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Keywords: Oral Cancer; Chest CT; Surveillance; Screening; Audit

Introduction

The staging of oral cancer involves assessment of the chest to exclude pulmonary metastases or synchronous cancer of the lung. Screening at presentation shows that between 6% and 20% of patients also have tumour in the lungs,[1] and this likelihood is increased in those with disease at advanced T and N stages.[2,3]

After a detailed review of case notes in 2009,[4] our unit produced a protocol that recommended computed tomography (CT) of the chest for all patients with squamous cell carcinoma (SCC) of the head and neck, irrespective of site or stage.[5] This was further supported by a systematic review by McLeod et al,[1] and national multidisciplinary team (MDT) guidelines endorsed by the British Associations of Head and Neck Oncologists, Oral and Maxillofacial Surgeons, Plastic and Reconstructive Surgeons, and Otorhinolaryngology-Head and Neck Surgeons.[6]

In patients with oral cancer, screening at presentation can identify focal, non-specific pulmonary nodules as small as 1-2 mm that may require follow up (according to local guidelines) because of the potential for malignant change. As there is no standard recommendation for this in head and neck cancer, we use the Fleischner Society recommendations for the

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Table 1
Fleischner Society recommendations for follow up and management of nodules smaller than 8 mm.

Size of nodule (mm)[*]	Low-risk patient[†]	High-risk patient[‡]
Up to 4	No follow up needed[§]	Follow-up CT at 12 months; if unchanged, no further follow up[‖]
>4-6	Follow-up CT at 12 months; if unchanged, no further follow up[‖]	Initial follow-up CT at 6 – 12 months then at 18 - 24 months if no change[‖]
>6-8	Initial follow-up CT at 6 – 12 months then at 18 - 24 months if no change	Initial follow-up CT at 3 – 6 months then at 9 – 12, and 24 months if no change
>8	Follow-up CT at around 3, 9, and 24 months, dynamic contrast-enhanced CT, PET, or biopsy, or a combination	Same as for low risk patient

CT: computed tomography; PET: positron emission tomography
Note: newly-detected indeterminate nodule in people aged 35 years or older.
[*] Approximate length and width
[†] Minimal or absent history of smoking and other known risk factors
[‡] History of smoking or other known risk factors
[§] The risk of malignancy in this category (<1%) is substantially lower than that in a baseline CT of an asymptomatic smoker
[‖] Non-solid (ground-glass) or partly solid nodules may require longer follow up to exclude indolent adenocarcinoma

follow up and management of nodules smaller than 8 mm (Table 1).[7] These were developed by MacMahon et al because the detection of focal pulmonary opacities 1-2 mm in size had become routine, and the previous standard practice of follow up for two years until stable was not proving beneficial or cost-effective.

We suspected that some of our patients had not had a repeat CT of the chest as recommended by the MDT, and we did not know whether the small nodules were important or whether the Fleischner Society recommendations were reasonable in head and neck practice. Our aims therefore were to check if subsequent surveillance scans had been done as recommended, and to ascertain the outcome of the patients who had them.

Methods

Between 1 January 2010 and 31 December 2013, 413 patients with oral SCC were treated with curative intent or were actively monitored at the Merseyside and Cheshire Regional Head and Neck Surgical Unit. Patients treated palliatively were not included as it was reasonable to expect no recommendation for surveillance CT of the chest in this group. Data was collected from the MDT database and cross-referenced with electronic records. When copies of the original thoracic scans and reports were incomplete, they were obtained from the referring hospital.

When nodules were detected and a follow-up scan was deemed appropriate, the radiologist reported this according to the Fleischner Society recommendations. Patients with nodules smaller than 4 mm were not routinely recommended for follow-up scans because such small opacities on CT are common and low-risk (under 1%),[8] but they were reported, and the need for a follow-up scan and the interval was left to the discretion of the radiologist. For this audit, scans were classified as clear, abnormal, or metastatic. Abnormal results included those with suspicious disease, indeterminate lesions

or nodules, or cases in which the nodules had increased in size. Diagnoses of malignancy were not confirmed histologically, but based on clinicoradiological findings.

Results

Table 2 shows the clinical characteristics of the 413 patients. Fifty-eight per cent had early-stage disease. Survival at 12 months was 86% (n = 357/413).

Figure 1 shows the data on all the patients. Data were incomplete in 23. Figure 2 shows details of the 51 whose scans showed an abnormality. Of the 29 who did not have the recommended follow-up scans, 16 were based at Aintree University Hospital and 13 at peripheral hospitals. There was no notable variation regarding individual consultants.

Table 2
Details of 413 patients with oral squamous cell carcinoma. Data are number (%) unless otherwise stated.

Characteristics	Value
Mean (SD) age (years)	63 (13)
Sex:	
Male	156 (38)
Female	257 (62)
T stage:	
1	166 (40)
2	125 (30)
3	43 (11)
4	79 (19)
N stage:	
X/0	301 (73)
1	43 (11)
2	66 (15)
3	3 (1)
Stage:	
1	159 (39)
2	79 (19)
3	50 (12)
4	125 (30)