

Effectiveness of X-ray and computed tomography screening for assessing pulmonary involvement in patients with head and neck squamous cell carcinoma

J Laryngol Otol 2008;**122**:961–6

Dear Sirs

We read with great interest the article by Leong *et al.* published recently in *The Journal of Laryngology & Otology*.¹ These authors analysed the effectiveness of X-ray and computed tomography (CT) in the detection of lung metastases or synchronous lung primary tumours in patients with newly diagnosed head and neck squamous cell carcinoma (SCC), and they assessed the factors associated with positive findings.

Detection of distant metastases or synchronous second primary tumours at the time of initial evaluation clearly influences the selection of treatment in head and neck SCC patients. Patients with distant metastases are generally not considered curable and almost always receive only palliative treatment. If a synchronous second primary tumour is present, the choice of treatment is dictated by the primary tumour with the worst prognosis.

The authors recommend chest CT screening in newly diagnosed cases of head and neck SCC. However, the incidence of distant metastasis is generally too low to warrant an extensive radiographic staging evaluation, nor does the incidence of synchronous second primary tumours justify screening for these lesions. Only patients with advanced stage disease should undergo routine scanning for distant metastases.^{2,3} Commendably, the authors compare both imaging techniques ‘head to head’. Plain X-ray of the thorax detects a minority of all malignant pulmonary lesions detected by CT.^{2,3} The authors found a sensitivity of 100 per cent for CT and 35.7 per cent for X-ray. However, they use CT (repeated in the case of suspicious findings) as the ‘gold’ (reference) standard with which to obtain accuracy data. Previous studies have shown that CT scanning frequently misses lung metastases.⁴ Therefore, the only fully reliable gold standard is long term follow up or autopsy. Although the longer the follow up the more reliable the reference standard, a follow up of 12 months seems to be sufficient, since the vast majority of distant metastases will become manifest within this period.

Unfortunately, follow up of patients with negative CT screening is rarely reported, and Leong and colleagues’ study is no exception. Distant metastases that appear during follow up in patients who achieved loco-regional control must have arisen from subclinical distant spread already present at the time of treatment. Thus, if patients with loco-regional control develop distant metastases despite negative screening, these distant metastases must have been missed by (i.e. were below the detection limit of) the technique used for screening (e.g. CT of the thorax). In a recent study, we found that CT failed to detect malignant abnormalities in the thorax in at least 22 per cent of head and neck SCC patients.⁴ Because

follow up in Leong and colleagues’ study is lacking, sensitivity is overestimated and thus less meaningful.

Furthermore, it is not clear how the authors attempted to determine the nature of abnormal CT findings, which is vital. In several studies in which screening for distant metastases was investigated, attempts were made to determine the nature of abnormal or suspicious CT findings. Screening was considered to be true positive when there was: an evident metastasis or second primary tumour on CT; thorax CT scan lesions which were progressive on two successive CT scans with an interval of three months; or malignancy revealed by histopathological examination of tissue obtained by bronchoscopy, thoracoscopy or thoracotomy.^{2–4} These additional examinations appeared to be helpful.² Leong *et al.* seem to use only a screening CT and, for suspicious lesions, a repeated CT scan.

Leong and colleagues mention some disadvantages of fluoro-deoxy-glucose positron emission tomography (FDG-PET), and state that FDG-PET may not abrogate CT in the detection of distant metastases and synchronous second primary tumours. Indeed, two recent studies showed that the combination of FDG-PET and CT detected distant metastases in more head and neck SCC patients, compared with either imaging modality alone.^{5,6}

We support the authors’ attempt to identify risk factors. There is indeed a need for clear guidelines for staging the disease with respect to distant metastases in head and neck SCC patients.⁷ We would recommend the use of CT and FDG-PET only in patients with high risk factors for distant metastases. Adequate staging (and screening for second primary tumours) decreases over-treatment by reducing the number of futile extensive treatments.

R de Bree
O S Hoekstra
J A Castelijns
C R Leemans
Department of Otolaryngology, Head and Neck Surgery,
VU University Medical Centre,
Amsterdam,
The Netherlands.

References

- 1 Leong SC, Javed F, Elliot S, Mortimore S. Effectiveness of X-ray and computed tomography screening for assessing pulmonary involvement in patients with head and neck squamous cell carcinoma. *J Laryngol Otol* 2008;**122**:961–6
- 2 Loh KS, Brown DH, Baker JT, Gilbert RP, Gullane PJ, Irish JC. A rational approach to pulmonary screening in newly diagnosed head and neck cancer. *Head Neck* 2005;**27**:990–4
- 3 de Bree R, Deurloo EE, Snow GB, Leemans CR. Screening for distant metastases in patients with head and neck cancer. *Laryngoscope* 2000;**110**:397–400
- 4 Brouwer J, de Bree R, Hoekstra OS, Golding RP, Langendijk JA, Castelijns JA *et al.* Screening for distant metastases in patients with head and neck cancer: is chest CT sufficient? *Laryngoscope* 2005;**115**:1808–12
- 5 Senft A, de Bree R, Hoekstra OS, Kuik DJ, Golding RP, van Oyen WJG *et al.* Screening for distant metastases in head and neck cancer patients by chest CT or whole body

First published online 20 May 2009.

FDG-PET: a prospective multicenter trial. *Radiother Oncol* 2008;**87**:221–9

- 6 Ng SH, Chan SC, Liao CT, Chang JT, Ko SF, Wang HM *et al.* Distant metastases and synchronous second primary tumors in patients with newly diagnosed oropharyngeal and hypopharyngeal carcinomas: evaluation of (18)F-FDG PET and extended-field multi-detector row CT. *Neuroradiology* 2008;**50**:969–79
- 7 Brouwer J, de Bree R, Hoekstra OS, Langendijk JA, Castelijns JA, Leemans CR. Screening for distant metastases in patients with head and neck cancer: what is the current clinical practice? *Clin Otolaryngol* 2005;**30**:438–43

Authors' reply

Dear Sirs

We thank de Bree *et al.* for their comments regarding our article.

We agree that if a synchronous secondary primary tumour is present, the choice of treatment is dictated by the primary tumour with the worst prognosis, although other considerations such as quality of life and co-morbidities would also be considered. Whilst we agree that the incidence of distant metastasis is low, the objective of our study was to evaluate the benefits of radiological screening and the incidence of pulmonary

involvement in newly diagnosed head and neck cancers. Dr de Bree and colleagues also state that distant metastases appearing during follow up in patients who have achieved loco-regional control must have arisen from sub-clinical distant spread already present at the time of treatment. We did not find any references to support this assumption. We found the discussion on FDG-PET in high-risk patients very informative, and would take this into consideration in any future reports from the department. We appreciate that there are variations of practice between countries; FDG-PET is not currently standard practice in our department.

We would again like to thank de Bree *et al.* for their interest in our paper, and we have taken note of their points.

S C Leong¹

F Javed¹

S Elliot²

S Mortimore¹

¹Department of Otolaryngology – Head and Neck Surgery

²Department of Radiology,

Derby Royal Infirmary,

Derby DE1 2QY,

United Kingdom