Prediction of Simultaneous Esophageal Lesions in Head and Neck Squamous Cell Carcinoma

A Multivariate Analysis

Tam-Lin Chow, FRCS(Edin), FHKAM(Surgery); Daniel Tai-Yam Lee, FRCS(Edin), FHKAM(Surgery); Chi-Yee Choi, FRCS(Edin), FHKAM(Surgery); Tony Tung-Fei Chan, FRCS(Edin), FHKAM(Surgery); Siu-Ho Lam, FRCS(Glas), FHKAM(Surgery)

Objective: To evaluate the frequency of concomitant esophageal lesions detected by esophagoscopy in squamous cell carcinoma (SCC) in the head and neck (HNSCC) and to identify the risk factors.

Design: Retrospective medical record analysis.

Setting: Regional hospital.

Patients: From March 2000 to March 2006, 118 patients with HNSCC had undergone esophagoscopy as part of the disease workup. Three patients had double head and neck primary tumors. Sixty-five patients also underwent choroendoscopy with Lugol’s iodine solution.

Main Outcome Measures: The incidence of simultaneous esophageal cancer diagnosed on esophagoscopy. Additional esophageal lesions of clinical significance discovered during choroendoscopy were also evaluated.

Results: Clinically important esophageal lesions were found in 12 patients (10%)—9 carcinomas and 3 dysplastic lesions. Chromoendoscopy was useful in 5 of these 12 cases, detecting 3 dysplastic lesions not visualized by ordinary esophagogastroduodenoscopy and additional lesions in 2 patients with esophageal carcinoma. Of the patients in whom isolated oral cavity SCC was considered, the incidence of synchronous esophageal lesions was only 1.5%. Sex (P = .02), younger age (P = .04), alcohol drinking (P = .047), and tumor sites (P = .002) were significant predictors of synchronous esophageal lesions on univariate analysis. On multivariate analysis, only tumor site remained a significant risk factor (P = .009).

Conclusions: Clinically important esophageal lesions rarely coexists with oral cavity SCC, for which the benefit of routine esphagagogastroduodenoscopy is questionable. Chromoendoscopy enhances the identification of early but clinically important esophageal abnormalities if esophagoscopy is performed for SCC in the larynx, hypopharynx, and oropharynx.

Arch Otolaryngol Head Neck Surg. 2009;135(9):882-885
wise, Cianfriglia et al\(^6\) could not discover any simultaneous esophageal or bronchus cancer in patients with oral SCC. However, identification of simultaneous esophageal cancer, albeit uncommon, is very important because its presence will alter the management plan. It is also troublesome if esophageal cancer is found during the early follow-up period. The patient might require a second operation, which is increasingly difficult due to prior surgery or radiotherapy for the HNSCC.

Head and neck SCC is a heterogeneous entity of cancer. Various patient and tumor (site or stage) characteristics can influence the incidence of simultaneous esophageal cancer in patients with HNSCC. In our institution, chromoendoscopy with Lugol’s iodine solution was also carried out with the intention to detect early esophageal lesions. This study aimed to evaluate the different potential variables on the incidence of simultaneous esophageal lesions by multivariate analysis. The role of chromoendoscopy on this cohort of patients was also appraised.

### METHODS

Non-SCC head and neck cancer was not included in this survey. For patients with newly diagnosed HNSCC, triple endoscopy was performed as part of the workup for simultaneous tumor. Flexible laryngoscopy was usually performed at the outpatient office. Esophagoscopy and/or flexible bronchoscopy were performed at the hospital endoscopy center with local anesthesia. If indicated, these 2 endoscopic procedures were performed in the operation theater at the same time as rigid laryngoscopy with general anesthesia. Esophagoscopy was not performed on a minority of patients because of various reasons, such as extremely advanced age, refusal by the patient, or not cooperative during the procedure. Bronchoscopy was omitted in some patients, as in recent years computed tomographic (CT) scanning of the thorax has been performed more liberally to detect any metastases or simultaneous second cancers in the lungs.

Chromoendoscopy was offered to some patients during esophagoscopy, especially when mucosal lesions at the esophagus were identified. Lugol’s iodine solution, 3%, was sprayed to the surface of the whole esophagus and was washed out with isotonic sodium chloride solution for 5 minutes. A biopsy specimen was taken from the hypostained area of the esophagus for histopathologic examination. When gross tumor was visualized on ordinary esophagoscopy, chromoendoscopy was also carried out to more accurately delineate its extent as indicated by any unstained mucosa in its vicinity. Not all patients underwent chromoendoscopy in this cohort owing to the logistic reason of there being a shortage of chromoendoscopy sessions.

From March 2000 to March 2006, 147 patients with histopathologically proven SCC of the head and neck region were retrievable from our hospital head and neck cancer registry. Only 118 patients had undergone esophagagogastrodudenoscopy (OGD). These 118 patients formed the group of patients for subsequent evaluation. Thirty-three patients (28%) were female. The mean age was 68.0 years (range, 37-87 years).

As 3 patients had double HNSCC, a total of 121 primary HNSCC tumors were presented: oral cavity (n=69), oropharynx (n=16), hypopharynx (n=18), larynx (n=15), and cervical esophagus (n=3). Of the 3 patients with double HNSCC, the primary sites were oral cavity + hypopharynx (n=1), oropharynx + larynx (n=1) and oral cavity + oropharynx (n=1).

The tumor site, patient age, sex, smoking habit, alcohol drinking, T category, and N category were evaluated for any correlation with simultaneous esophageal neoplastic lesions (dysplasia or carcinoma). Univariate analysis was computed by the \(\chi^2\) test or Fisher exact test when appropriate for categorical variables and by the unpaired \(t\) test for continuous variables. Multivariate analysis by forward stepwise logistic regression was used to compare those significant factors on univariate analysis. \(P < .05\) was considered statistically significant. SPSS version 11.3 (SPSS Inc, Chicago, Illinois) was used for the statistical calculation.

### RESULTS

Sixty-five patients (55%) underwent chromoendoscopy. Clinically important esophageal lesions were found in 12 patients (10%)—9 carcinomas and 3 dysplastic lesions. Simultaneous esophageal lesions were least frequently found in the oral cavity SCC—only 2 of 69 patients (3%) (Table 1). The primary tumors were in the tongue in 1 patient, while the second patient had double primary cancer (tongue SCC and tonsil SCC). If only the isolated oral cavity SCC was counted, simultaneous esophageal lesions were present in only 1 case (2%).

All 9 esophageal carcinomas were visualized on ordinary OGD, but chromoendoscopy disclosed more extensive lesions after staining in 2 patients. In 3 other patients with “normal” OGD, dysplastic esophageal lesions were detected on chromoendoscopy. Hence, chromoendoscopy revealed extra lesions in 5 patients, with the implication of changing the management plan. Eighty-two patients (70%) also underwent bronchoscopy, and no abnormality was detected in the airway.

On univariate analysis, male sex \((P = .02)\), younger age \((P = .04)\), alcohol drinking \((P = .047)\), and tumor sites (oral cavity vs others) \((P = .002)\) were significant predictors of synchronous esophageal lesions (Table 2). On multivariate analysis, only tumor site remained a significant risk factor \((P = .009)\) (Table 3).

### COMMENT

Despite the well-recognized phenomenon of concomitant esophageal and lung cancers in patients with HNSCC, the benefit of routine triple endoscopy has yet to be established. Selective use of triple endoscopy as directed by symptom or plain chest radiography was shown to be safe, which was also verified in long-term follow-up.7,8 In the United States, the practice of triple endoscopy is

### Table 1. Simultaneous Esophageal Lesions in Different Sites of Primary Tumors

<table>
<thead>
<tr>
<th>Tumor Site</th>
<th>Yes, No. (%)</th>
<th>No, No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral cavity (n=69)</td>
<td>2 (3)</td>
<td>67</td>
</tr>
<tr>
<td>Oropharynx (n=16)</td>
<td>5 (21)</td>
<td>11</td>
</tr>
<tr>
<td>Hypopharynx (n=18)</td>
<td>3 (17)</td>
<td>15</td>
</tr>
<tr>
<td>Larynx (n=15)</td>
<td>2 (13)</td>
<td>13</td>
</tr>
<tr>
<td>Cervical esophagus (n=3)</td>
<td>1 (50)</td>
<td>2</td>
</tr>
</tbody>
</table>


©2009 American Medical Association. All rights reserved.

Downloaded From: 09/25/2018
geographically variable, which reflects its uncertain value as perceived by clinicians in different regions.4 Deletyanni and Weymuller5 highlighted the lack of evidence to uphold esophageal cancer screening by esophagoscopy for HNSCC and only recommended it to be performed at the same time of direct laryngoscopy, with the consideration of possible complications and the cost of the procedure.

Screening for simultaneous esophageal cancers is only justified if the incidence is not remote. In the comprehensive review by Guardiola et al16 the rate of synchronous esophageal cancer varies from 0% to 7.4%. If only studies after year 2000 are counted, the incidence is approximately 1%. The decreasing trend of concomitant esophageal lesions (9 carcinomas and 3 dysplastic lesions) occurred in 10% of patients with HNSCC. This figure is not negligible.

Some factors have been postulated to govern the incidence of esophageal cancer in HNSCC—patient age, tumor site, and heavy smoking.3,6,11 In these studies, multivariate analysis was not conducted to eliminate the confounder effect. Based on the results in our study, male sex, younger age, alcohol drinking, and tumor site were significant predictors of synchronous esophageal lesions on univariate analysis. However, only tumor site (oral cavity vs others) was proven to be significant on multivariate analysis. Isolated oral cavity SCC rarely coexists with esophageal cancer (in only 2% of patients). Because of this low risk, we question the role of routine triple endoscopy for oral cavity SCC and would rather to reserve it for patients with SCC of the oropharynx, larynx, and hypopharynx. The latter groups of patients often require rigid laryngoscopy for tumor staging, during which esophagoscopy can be performed.

The attenuating role of routine triple endoscopy is also attributed to the advance of modern imaging. Computed tomography, magnetic resonance imaging, or positron emission tomography are sensitive modalities to pick up lung cancer. Positron emission tomography and panendoscopy were equally effective to detect primary HNSCC.12 From our results, lung cancer was not diagnosed in any patients by bronchoscopy. Currently, bronchoscopy is reserved for symptomatic patients or if abnormality is present on plain radiography or computed tomography of the chest.

Gross esophageal cancer discovered by ordinary OGD is usually symptomatic and advanced, which heralds poor prognosis. Chromoendoscopy can hopefully detect early lesions, which are more amenable to treatment. No major complications after this procedure were encountered in our series. It revealed extra abnormalities not identified by ordinary esophagoscopy in 3 patients (3 cases of isolated dysplasia and 2 cases of dysplastic mucosa beyond the gross extent of esophageal cancer). The management plan was critically altered in 3 of these patients—endoscopic mucosal resection of the dysplastic esophagus in 1 patient and 2 other patients received chemoradiation instead of surgery. We concur with the assertion by Fagundes et al13 that chromoendoscopy is an easy and inexpensive method to detect early but clinically important abnormalities for people at risk for esophageal carcinoma. In conclusion, simultaneous esophageal lesions are rare in oral cavity SCC. The value of routine esophagoscopy in oral cavity SCC is contentious. When esophagoscopy is indicated for HNSCC, chromoendoscopy is useful to detect early mucosal lesions, which might alter the management plan for some patients.

Submitted for Publication: November 15, 2008; final revision received January 12, 2009; accepted February 3, 2009.

Correspondence: Tam-Lin Chow, FRCS(Edin), FHKAM (Surgery), Department of Surgery, United Christian Hospital, 130 Hip Wo St, Kwun Tong, Kowloon, Hong Kong SAR (tamlinc@yahoo.com).

Author Contributions: Dr Chow had full access to all the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis. Study concept and design: Chow. Acquisition of data: Chow, Choi, and Chan. Analysis and interpretation of data: Chow, Lee.
and Lam. Drafting of the manuscript: Chow. Critical revision of the manuscript for important intellectual content: Lee, Choi, Chan, and Lam. Statistical analysis: Chow and Lee. Administrative, technical, and material support: Lam. Financial Disclosure: None reported.

Previous Presentation: The study was presented as a poster at the Royal College of Surgeons of Edinburgh–College of Surgeons of Hong Kong Conjoint Scientific Congress; October 10-13, 2006; Hong Kong.

REFERENCES