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Bilateral carcinomas of the maxillary sinus

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Abstract
We report a 68-year-old male with a rare case of synchronous bilateral carcinomas of the maxillary sinus. A CT scan revealed a large tumour mass that extruded from the left maxillary sinus; tissue of soft density filled the right antrum which had intact bony walls. A probe antrostomy on the right side disclosed a tumour which was diagnosed histologically as the same poorly differentiated squamous cell carcinoma as that in the left antrum. The incidence and aetiology of this disorder are presented, and its diagnosis and management are discussed.

Key words: Maxillary sinus neoplasms, carcinoma, squamous cell, bilateral.

Introduction

While multiple primary carcinomas of the upper aerodigestive tract are not uncommon, bilateral carcinomas of the maxillary sinus are extremely rare. Shibuya *et al.* (1986) reported five patients with bilateral disease among 351 cases of maxillary sinus carcinoma surveyed in Japan. All five had a history of intervals longer than five years between the carcinomas. Miyaguchi *et al.* (1990) found a similar incidence in their study, namely 10 cases of 802 surveyed. However, few cases of bilateral maxillary carcinoma have been reported in the western literature (Ichimura *et al.*, 1981). We present a case of synchronous bilateral carcinomas of the maxillary sinus.

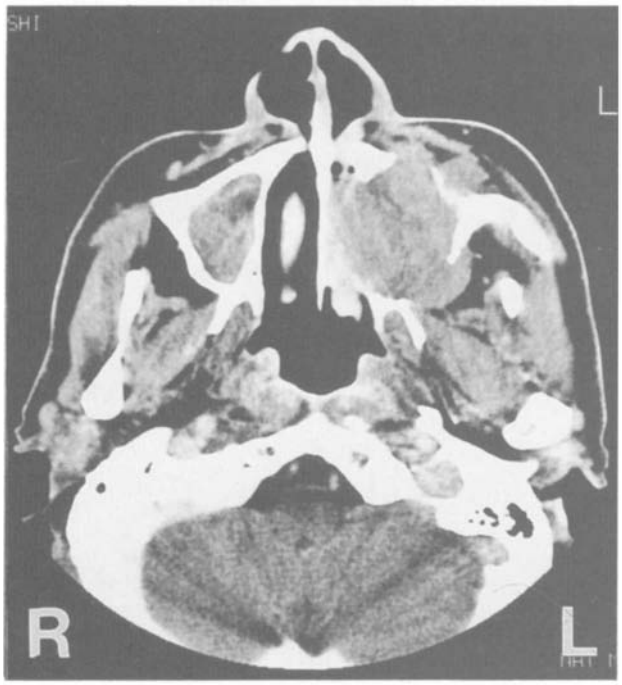

FIG. 1
Axial CT scan. A tumour has destroyed the medial, anterior, and posterior walls of the left maxillary sinus. A lesion with the density of soft tissue fills the right antrum whose bony walls are intact.

Case report

In February, 1991, a 68-year-old man was referred to us with a two-month history of bleeding from the mouth, nasal obstruction, and swelling of the left cheek. Physical examination revealed a reddish, friable and ulcerated tumour that occupied the left half of the hard palate. The left nasal turbinates were displaced medially. Three cervical lymph nodes were palpable on the left side. A post-contrast CT scan showed a mass of the density of soft tissue filling both maxillary sinuses. A large tumour mass had destroyed the medial, anterior and posterior walls and the floor of the left antrum, and extended into the oral cavity, the left nasal cavity, and the infratemporal fossa. However, the right maxillary antral walls remained intact (Figs. 1 & 2). Biopsy of the lesion on the hard palate led to a histological diagnosis of a poorly differentiated squamous cell carcinoma. The right maxillary sinus was subsequently opened through a Caldwell-Luc procedure, and was found to be filled with tumour which was also diagnosed histologically as a poorly differentiated squamous cell carcinoma.

The patient received a combination of radiotherapy and chemotherapy. The total dose of cobalt 60 applied was 3060 cGy to the left maxilla, 3300 cGy to the right maxilla, 3000 cGy to the left side of the neck, with an additional 3000 cGy administered to the right side of the neck because the right cervical lymph nodes began to swell following initiation of treatment. Concomitantly, the patient received 5-fluorouracil administered intra-arterially via a catheter inserted into the maxillary artery via the superficial temporal artery on each side. In an attempt to prevent distant metastases, he was administered carboplatin, given as two intravenous doses of 600 mg each.

Following these treatments, the tumours in the region of the maxilla and neck disappeared. However, shortly after, the patient developed numerous subcutaneous tumours over the entire body, considered to be metastases. There was severe back pain due to a probable metastasis to the seventh thoracic vertebral body. His condition deteriorated rapidly and he died in August, 1991, seven months after the diagnosis was made. An autopsy was not permitted.

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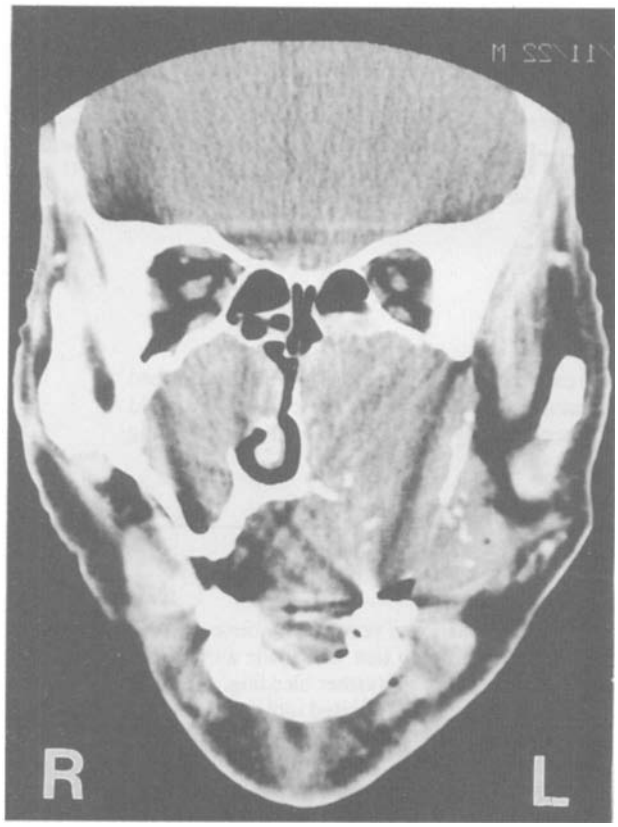

FIG. 2

Coronal CT scan. A tumour has destroyed the lateral wall and floor of the left antrum, and has extended into the oral cavity, nasal cavity, and infratemporal region. Notice that the nasal septum and floor of the right antrum are intact, which implies that the tumour of the right antrum is independent of that on the left.

Discussion

The following criteria described by Warren and Gates (1932) are used to diagnose multiple primary cancers. 1. Each neoplasm must be clearly malignant on histological examination. 2. Each neoplasm must be geographically separate and distinct and not connected by either submucosal or intra-epithelial neoplastic change. 3. The possibility of the second neoplasm being a metastasis must be excluded. Multiple primary cancers are classified according to their temporal sequence as synchronous or metachronous (Gluckman *et al.*, 1980). Synchronous cancers are those diagnosed at the same time as, or within six months of, the primary lesion. Metachronous cancers are those which occur six months after the primary lesion. The six-month interval is conventionally used with the idea that any neoplasm identified in that period was probably present at the same time as the initial cancer.

One might question whether the lesion in this patient's right antrum was metastatic or whether it resulted from a local spread of the lesion in the left antrum. Since no bony destruction of the right antral wall was identified on CT scanning, we excluded the possibility of local spread. Tumours of the maxillary sinus have been reported to metastasise rarely to the contralateral antrum (Shibuya *et al.*, 1985). In addition, the absence of any vascular or lymphatic communication between two sinuses strongly favours the diagnosis of primary tumours in our case.

The most widely accepted explanation for the multicentric nature of upper aerodigestive cancers is that of 'field cancerization'. That is, a common tissue exposed to the same carcinogenic influence can be expected to develop multicentric cancers (Slaughter *et al.*, 1953, Moertel *et al.*, 1961). In the upper aerodigestive tract, habitual cigarette smoking is the single most important exposure carcinogen, and acts synergistically with alcohol in this respect (Rothman and Keller, 1972). However, despite the obvious exposure to cigarette smoke, the nasopharynx and paranasal sinuses do not seem to be included in this field of change. Other carcinogenic factors are likely to play a role in those areas (Gluckman *et al.*, 1980, Shibuya *et al.*, 1986).

For various reasons, patients who have multiple primary cancers of the upper aerodigestive tract have a poorer prognosis than those with a solitary lesion (Gluckman *et al.*, 1983). Therefore, an early diagnosis and appropriate treatment of the second lesion is essential. In cases of maxillary carcinoma, one should investigate the opposite maxillary sinus, since the incidence of a new cancer in the opposite antrum is 67 times greater than would be expected by chance (Shibuya *et al.*, 1986). If an abnormal shadow is found in the opposite antrum during radiologic examination, an exploratory antrostomy is indicated. CT scanning and/or MR imaging should be repeated during the follow-up period.

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