Carcinoma of the Ethmoid Sinus
—Report of 2 Cases—

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Summary: Two cases of carcinoma of the ethmoid sinus was reported. One was a 72-year-old female and the other was a 25-year-old female. The first symptom was epistaxis and exophthalmus. No cervical lymphnode was palpable in both cases. They were treated with surgery and irradiation. The first case is recently alive 3 years and 6 months after the initial treatments with no evidence of recurrent tumor. The second case is recently alive 1 year and 1 month from the initial treatment without any evidence of the recurrent tumor.

Key words: carcinoma—ethmoid sinus—carcinoma of ethmoid sinus

Introduction

Incidence of carcinoma of the ethmoid sinus is much rarer than that of carcinoma of the maxillary sinus. We treated three cases of carcinoma of the ethmoid sinus during the 10 years from 1971 to 1980 in the Kurume University Hospital. One of them was a previously treated case which had undergone surgery including frontal lobectomy and was inoperable. Only palliative treatment was done in our hospital. This paper presents a report of the other two cases which were curatively treated by us.

Case Report

Case 1: M.O.

A 72-year-old female developed bilateral nasal obstruction and visual disturbance early in September, 1978. Epistaxis from right nasal cavity occurred on October 15. The patient visited our out-patient clinic on October 20 and was admitted to our hospital on October 24.

On physical examination, the bilateral nasal cavities were filled with hemorrhagic tumor. The bilateral choanae were completely obstructed by the tumor. Exophthalmus was observed bilaterally. No cervical lymphnode was palpable. X-ray films revealed dullness in the bilateral ethmoid sinuses and nasal cavities. There was no evidence of bone destruction. CT scan showed mass lesions in the bilateral ethmoid sinuses and the nasal cavities. Biopsy from the tumor in the nasal cavity, done on October 25, revealed a poorly differentiated squamous cell carcinoma.

Pre-operative radiation, 4650 rad in total, was given to the patient from November 1 to December 13. On December 18, extirpation of the tumor was performed via the right maxillary sinus. Bilateral ethmoid sinuses were filled with necrotic tumor and the bone of the superior wall of the sinuses was removed together with the tumor, exposing the dura mater. On histo-
logical examination of the extirpated tumor, carcinoma cells were scarcely found, demonstrating an excellent effect of pre-operative radiation. Post-operative radiation, 900 rad, in total, was given after the surgery.

The patient is recently alive 3 years and 6 months after the initial treatment without any evidence of recurrent tumor.

**Case 2: M.I.**

A 25-year-old female noticed left exophthalmus without visual disturbance on January 15, 1980. The patient visited another clinic early in February and dullness in the left ethmoid sinus was pointed out on X-ray films. Exploratory ethmoidotomy via the left maxillary sinus was done on February 20. During operation, a hemorrhagic mass lesion was observed in the left ethmoid sinus and carcinoma was suspected. Histological examination confirmed a poorly differentiated squamous cell carcinoma.

The patient was referred to our hospital and was admitted on March 7. On physical examination, bilateral nasal cavities were intact. No cervical lymphnode was palpable. X-ray films revealed a tumor shadow in the left ethmoid sinus and showed bone destruction of the lateral and superior walls of the left ethmoid sinus. On CT scan, the left ethmoid sinus was filled with tumor.

Extirpation of the tumor was done on March 10 via the left maxillary sinus. White mass lesion was observed in the left ethmoid sinus and poorly differentiated squamous cell carcinoma was established on histologic examination. Post-operative radiation, 6000 rad in total, was given to the patient from March 13 to May 7. 5FU dry syrup, 3000 mg in total, was administrated from May 8 to June 1. The patient was discharged on June 17. The patient is recently alive 1 year and 1 month after the initial treatment without any evidence of recurrent tumor.

**Discussion**

Generally speaking, primary carcinoma of the ethmoid sinus is rare. Larsson and Martenson (1954) found 19 (5.6%) of 334 cases of carcinomas of the paranasal sinuses arising from the ethmoid sinus. In Japan, the incidence is lower than in the United States. Inuyama and Takasaki (1973) reported the incidence of ethmoid carcinoma among carcinoma of the paranasal sinuses in Japan ranged from 0.3% to 2%. Differences in the incidence between Japan and the United States is attributed to the fact that the incidence of carcinoma of the maxillary sinus is very high in Japan. Of all the 130 cases of carcinoma of the paranasal sinuses treated in Kurume University Hospital from 1971 to 1980, only three cases (2.3%) arised from the ethmoid sinus.

Nasal obstruction, which may be associated with a bloody discharge and a visual disturbance, is the most frequent symptom (Batsakis, 1979). Swelling of the cheek region and toothache, which are frequently observed in carcinoma of the maxillary sinus, are rare.

Diagnosis is established following biopsy either through the nose of via a transmaxillary approach (Batsakis, 1979). On histological examination, the dominant type is a squamous cell carcinoma. But the incidence of the adenocarcinoma is relatively higher than in the maxillary sinus. Inuyama and Takasaki (1973) reported 8 adenocarcinomas (23.5%) out of 34 cases of carcinomas of the ethmoid sinus. Both of our two cases were squamous cell carcinoma.

Treatment of carcinoma of the ethmoid sinus is different from that of carcinoma of the maxillary sinus. Inuyama and Takasaki (1973) recommended surgery combined with radiation therapy for carcinoma of the ethmoid sinus. Intra-arterial infusion via the superficial temporal artery have little effect on carcinoma of the ethmoid sinus, because the ethmoid region is chiefly sup-
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TABLE 1
Survival rate reported in literature

<table>
<thead>
<tr>
<th>Authors</th>
<th>Type of primary treatment</th>
<th>No. of pt.</th>
<th>5-year survival rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>ZANGE and SCHOLTZ (1963)</td>
<td>Surgery only</td>
<td>5/8</td>
<td>9/22</td>
</tr>
<tr>
<td></td>
<td>Op. + rad.</td>
<td>4/12</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rad. only</td>
<td>0/2</td>
<td></td>
</tr>
<tr>
<td>GIGNOUX and LABYLE (1963)</td>
<td>Op. + rad.</td>
<td>13/51</td>
<td></td>
</tr>
<tr>
<td>MOUNIER-KUHN et al. (1966)</td>
<td>Surgery only</td>
<td>2/7</td>
<td>16/38</td>
</tr>
<tr>
<td></td>
<td>Op. + rad.</td>
<td>12/24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rad. only</td>
<td>2/7</td>
<td></td>
</tr>
<tr>
<td>LEROUX-ROBERT (1969)</td>
<td>Varying</td>
<td>27/64</td>
<td></td>
</tr>
</tbody>
</table>

Op. : Operation  Rad. : Radiation

plied by the internal carotid artery. Our cases were successfully treated with the surgery combined with irradiation. However, radical surgery for the ethmoid sinus is difficult because of the proximity of the ethmoid to the base of the skull. Surgery often involves removal of the base of the skull and may cause liquorrhea and complications such as meningitis.

Five-year survival rate reported in literatures are presented in Table 1. The rate ranges from 26% to 42%.

References

BATSAKIS, J.G. (1979). Tumors of the head and neck. —Clinical and pathological considera-

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