Carcinoma of the Sphenoid Sinus

—Report of a Case—

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Received for publication April 10, 1982

Summary: A case of carcinoma of the sphenoid sinus, which was treated in Kurume University Hospital for the period of 10 years from 1971 to 1980, was reported. The incidence of carcinoma of the sphenoid sinus in all carcinomas of the paranasal sinuses was 0.8% (1/130) in our department. The patient was a 70-year-old man. The tumor originated from the right sphenoid sinus and invaded the cranial base, presenting involvements of II–VI cranial nerves. Surgical removal of the mass followed by radiation therapy could not afford to prolong his life because of the extensive invasion.

Key words: carcinoma — sphenoid sinus — carcinoma of sphenoid sinus

Introduction

Primary cancer of the sphenoid sinus is very rare. Only 11 cases of primary cancer of the sphenoid sinus had been reported before 1976 in Japan. Sakai (1975) treated 908 cases with malignant tumor of the nasal cavity and paranasal sinuses during 17 years but he found no primary cancer of the sphenoid sinus. This paper describes a case of carcinoma of the sphenoid sinus treated at Kurume University Hospital.

Case Report

A 70-year-old male developed pain in the frontal region in September 1979 and visited the Department of Brain Surgery, Kurume University Hospital. Nothing particular was found clinically, and the patient was sent to a clinic near his house. He was treated with medicine for four months there. The pain, however, increased and he visited the Department of Brain Surgery again. A tumor of the right sphenoid sinus was pointed out and the patient was referred to our department.

At the first examination in our department, he had pain in the frontal region and the right eye ball. Movement of the right eye ball was inhibited in all directions. Light reflex and corneal reflex were absent. Visual acuity was completely lost. The visual acuity of the left side was severely impaired, but light and corneal reflexes still existed. Movements of the left eye in all directions, except for abduction, were disturbed moderately. Sensory disturbance on the right side of the face was observed.

Rhinoscopic examination revealed a mass formation in the right middle meatus extending to the posterior part of the inferior turbinate. The Rosenmueller fossa was slightly swollen.

X-ray revealed a dense opacity in the right sphenoid sinus, posterior ethmoid cells and maxillary sinus. Bony walls of these
sinuses were destroyed (Fig. 1).

From the X-ray findings, we thought it impossible to remove the tumor completely with surgery. We adopted a combination therapy consisting of mass reduction surgery, radiotherapy, chemotherapy and necrotomy. Exploratory maxillotomy and intra-arterial tubing into the superficial temporal artery were done on April 14, 1980. Neoplastic lesion was recognized in the posterior part of the maxillary sinus. The inferior, lateral and frontal walls were intact, but the bone of the medial wall was partly destroyed. Histological examination of the lesion showed undifferentiated carcinoma.

A pre-surgical radiation (800 rad in total), and chemotherapy via intra-arterial infusion (5Fu 60 mg, BUdR 2000 mg) were applied. On April 21, 1980, mass reduction surgery was performed. The medial wall of the maxillary sinus was removed. The sphenoid sinus and the posterior group of the ethmoid cells were filled with tumor. The tumor was removed as much as possible, resulting in an exposure of the dura mater.

Two days after the surgery, the patient suddenly became comatose. Computerized tomography showed a marked enlargement of the lateral ventricle extending to the fourth ventricle, which presented internal hydrocephalus. He died in two days. Autopsy was not done.

Discussion

Malignant tumors of the paranasal sinuses are originated from the maxillary sinus in the majority of cases (Sakai et al. 1975; Ashikawa et al. 1972). Carcinoma arising from the sphenoid sinus is very rare. The rate of primary carcinoma of the sphenoid sinus was 1 of 130 patients who were hospitalized in our department during the 10 years from 1971 to 1980.

The average age of patients were reported to be 55.7 years by Ashikawa et al. (1972), 44.0 years by Hardie (1943), 46.8 years by Bennett (1964). Our patient was 70 years old, being older than the average age in the previous reports. Males are more frequent than females (Ashikawa et al. 1972).

No symptom appears at early stage of

Fig. 1. X-ray tomograms demonstrating a dense opacity in the right sphenoid (S), ethmoid (E) and maxillary (M) sinuses.
CARCINOMA OF SPHENOID SINUS

This cancer. Therefore, we cannot recognized the existence of the tumor before it grows large enough to obstruct the orifice of the sinus, resulting in sinusitis and causing problems to the neighboring organs (Ashikawa et al. 1972). Frequent symptoms of this pathology are headache, loss of eye sight, exophthalmus and nasal obstruction (Ashikawa, 1972). These symptoms appear when neighboring structures are involved. Hardie (1943) described 5 channels of tumor extension: (1) orbital extension, (2) nasal extension, (3) cranial extension, (4) petrous extension and (5) occipital extension. Our case complained of pain in the frontal region and presented neurological signs of II–VI cranial nerves which seemed to be caused by a cranial and petrous extension.

As for treatment, surgery, radiotherapy and/or chemotherapy has been applied, but the results were extremely poor (Ashikawa, 1972; Bennett, 1964). We also attempted a combination therapy for our patient but failed to cure the patient because of extensive invasion of the tumor.

References