

Laryngeal Carcinoma Presenting with Cavernous Sinus Metastasis
S Koseoglu¹, A Ikinciogullari¹, MA Cetin¹, D Atan¹, KM Ozcan¹, H Dere¹

ABSTRACT

Laryngeal carcinoma can metastasize to several locations among which neck is the most frequent. In this case report 53 years old patient who diagnosed with laryngeal carcinoma underwent total laryngectomy, total thyroidectomy and right radical neck dissection. Contralateral neck dissection was planned for three weeks later. On the third postoperative week the patient developed VI and VII cranial nerve paralysis. The patient was given palliative chemoradiotherapy however, one year after the primary diagnosis and three months after the cavernous sinus metastasis he died. Despite the fact that the metastasis of the laryngeal carcinoma to the cavernous sinus is very rare, it has a very unfavorable prognosis.

Keywords: Brain, cavernous sinus, laryngeal neoplasms, neoplasm metastasis

From: ¹Ankara Numune Education and Research Hospital, ENT Department, Turkey.

Correspondence: Dr S Koseoglu, Ankara Numune Education and Research Hospital, Ear, Nose, and Throat Care Clinic. Anafartalar Mh, Talatpaşa Blv No:5, Altındağ/Ankara. Fax: +90 0 312 311 43 40. E-mail: drskoseoglu@gmail.com

INTRODUCTION

Laryngeal cancers constitute nearly 45% of all head and neck cancers (1). Histopathological diagnosis is squamous cell carcinoma in nearly 90% of the cases. Laryngeal cancers have supraglottic localization in 30% of the cases, they are glottic in 65% of the patients and have subglottic localizations in 5% of this population (2). They mostly involve the lymph nodes on the neck through lymphatic spread, to a lesser extent they can also involve mediastinal, abdominal and axillary lymph nodes (3). The presence of distant metastases changes the course of and the treatment approach to the disease. Distant metastases mainly take place *via* hematogenous spread and are seen during the advanced stages of the disease. Lung parenchyma, liver and bone are the most predominant sites for metastasis (4). In this paper we present a case with laryngeal carcinoma who also has cavernous sinus and cerebral metastasis.

CASE REPORT

53-year-old male patient who complained of hoarseness of his voice, difficulty in swallowing and weight loss that were present for the last three months was admitted to our department for further diagnostic workup and treatment. The patient had smoked for about one pack a day for 40 years. In the video laryngostroboscopic examination, there was an ulcerovegetative mass that started from the laryngeal surface of the epiglottis and that involved right and left aryepiglottic folds, right arythenoid cartilage, ventricle and band ventricles. In the examination of his neck, the patient had a level 3 mass on the right measuring 4 x 3 x 3 cm that was fixed, painless and that had irregular borders and on the left at level 3 localization there was a mass of 3 x 3 x 2 cm that was hard and semi-mobile. Computerized neck tomography (CT) identified a mass which originated from the supraglottic field that destructed the thyroid cartilage at the

glottic level and had extra laryngeal extensions. Laryngeal biopsy was obtained and pathology results were reported as squamous epithelial carcinoma and the patient was staged as T4a N2c M0. He underwent total laryngectomy, total thyroidectomy and right radical neck dissection. Contralateral neck dissection was planned to be performed on the third postoperative week.

While the patient was being prepared for the contralateral neck dissection, he developed cranial nerve VI and VII paralysis (Fig. 1).

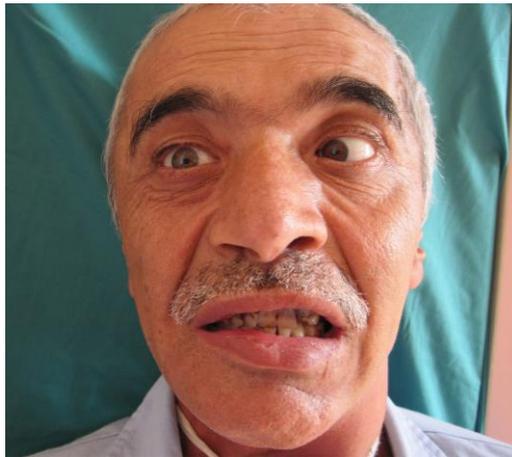


Fig. 1: Inward gaze limitation of the right eye and facial asymmetry.

On his maxillofacial CT, the patient had a mass extending to the right cavernous sinus while surrounding the internal carotid artery that correlated with a metastasis (Fig. 2).



Fig. 2: Paranasal sinus computerized tomography shows destruction of the right sphenoid wing and involvement of the right cavernous sinus.

Cranial MRI examination identified a mass that resulted in the thickening of the duramater on the right temporal lobe which filled the cavernous sinus and surrounded the internal carotid artery by 180 degrees while extending to the geniculate ganglion (Figs. 3a, 3b).

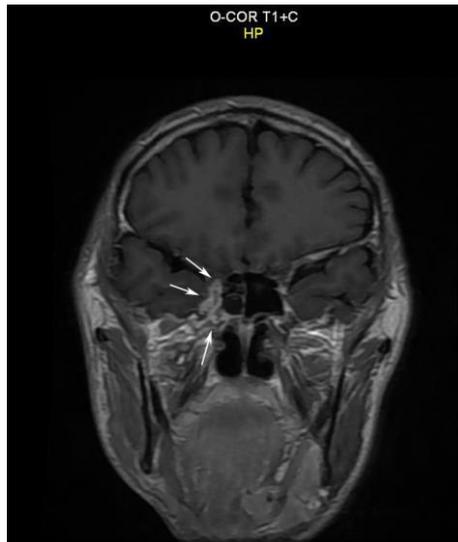


Fig. 3a: Gadolinium cranial MRI T1 coronal section shows contrast enhancing mass within the right cavernous sinus (marked with white arrows).

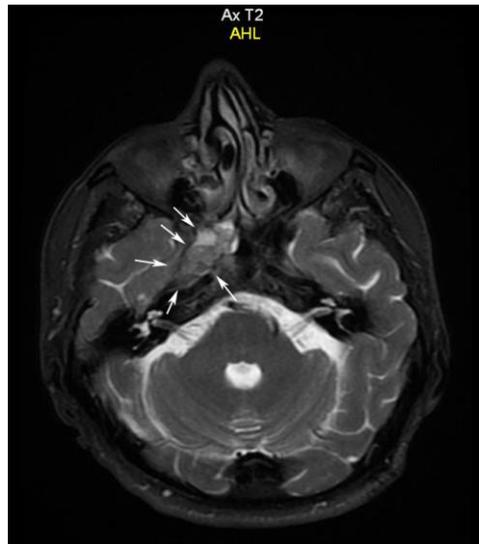
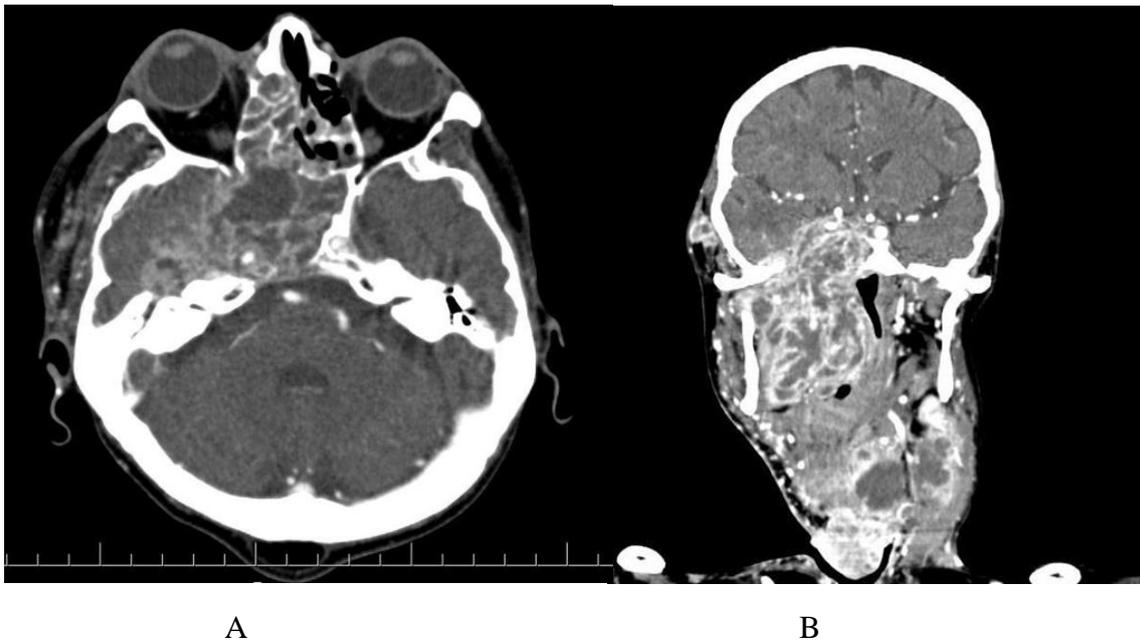


Fig. 3b: T2 axial section shows a mass surrounding the internal carotid artery from the anterior and resulting in the thickening of the right temporal dura.

As the patient had cerebral and cavernous sinus metastasis, Varian Trilogy equipment was used to administer a total dose of 3000 cGy radiotherapy at 10 fractions to the whole brain, right sphenoid area and right jugular lymph node area. Cranial and maxillofacial tomographies that were obtained following radiotherapy showed an increase in the size of the metastatic field inside the cavernous sinus (Figs. 4a, 4b). Contralateral neck dissection was not performed and palliative chemotherapy was administered. The patient died nearly one-year after establishing the diagnosis and three months after the identification of cavernous sinus metastasis.



Figs. 4a,4b: Cranial ve maxillofacial tomography of the massive metastatic mass extending to middle fossa and obliterating the right nasal cavity and paranasal sinuses on axial and coronal planes.

DISCUSSION

For squamous cell carcinomas of the head and neck, distant metastasis rate is around 9–11% and intracranial metastasis rate is 2–8% (5, 6). In a large series of 5141 patients with head and neck cancers studied in the Netherlands, intracranial metastasis rate was reported as 0.4% (7). Intracranial metastases of squamous cell carcinomas are usually in the form of single *foci*. Multiple cerebral metastases are less often seen (8).

In 2001, in a retrospective study performed in Amsterdam on 21 patients with head and neck epidermoid carcinomas, primary tumour was of laryngeal origin in four patients. Three patients had supraglottic and one patient had glottic tumours and the patients were identified to have cranial metastases within one to three months. The patients were administered with 1200–1600 cGy doses of RT and their survival was found to change between 2–14 months (7).

For our case, the survival after the identification of cranial and cavernous sinus metastases was three months.

Cavernous sinus tumours differ from other intracranial tumours because of their localization and related surgical problems. Sebaceous gland carcinoma, nasopharyngeal carcinoma, lung carcinoma and breast carcinoma can metastasize cavernous sinus (9).

Cavernous sinus metastases of laryngeal carcinomas are very rare (10–11). These patients can have headache, diplopia, strabismus, visual disturbances and facial paralysis/paresthesia. In patients having such complaints, CT and MRI findings can help in the identification of cavernous sinus metastases. As the invasion of internal carotid artery might be very soon in patients with cavernous sinus metastases, the survival can be limited to two to three months (7).

As surgery is not an option for patients having cranial and cavernous sinus metastases, treatment consists of radiotherapy (RT) and chemotherapy. Pain control should be aimed at.

Patients with cranial metastases have an average survival of one month, if RT is given this might extend the survival to six months (12). Sterotactic radiotherapy can be preferred in patients with solid cranial metastasis as it can take the metastasis safely under control, decrease the morbidity and can increase the quality of life (13–15).

In laryngeal cancer patients intracranial metastases should be kept in mind when headache and/or ocular symptoms develop. In such a case, detailed neurological examination should be performed and advanced imaging techniques should be used. Laryngeal cancer patients having intracranial metastases have very unfavorable prognoses, despite the administration of conventional or stereotactic RT survival is usually less than six months.

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