

Cavernous Sinus Metastasis of Laryngeal Carcinoma: A Case Report

S Koseoglu¹, A Ikinciogullari², MA Cetin², D Atan³, KM Ozcan⁴, H Dere⁵

ABSTRACT

Laryngeal carcinoma can metastasize to many locations among which the neck is the most frequent. In this case report, a 53-year-old patient who was diagnosed with laryngeal carcinoma underwent total laryngectomy, total thyroidectomy and right radical neck dissection. Contralateral neck dissection was planned for 3 weeks later. On the third post-operative week, the patient developed VI and VII cranial nerve paralysis. The patient was given palliative chemo-radiotherapy. However, 1 year after the primary diagnosis and 3 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 unfavourable prognosis.

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

INTRODUCTION

Although differentiated thyroid cancer is rarely seen with laryngeal cancer they constitute nearly 45% of all head and neck cancers (1). Histopathological diagnosis is squamous cell carcinoma and is found in approximately 90% of the cases. Laryngeal cancers have subglottic 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, but to a lesser extent they can also involve mediastinal, abdominal and axillary lymph nodes (3). The presence of distant metastases changes the course 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 which also had cavernous sinus and cerebral metastasis.

CASE REPORT

A 53-year-old male patient who complained of hoarseness of his voice, difficulty in swallowing and weight

loss that were present for the last 3 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 the right and left aryepiglottic folds, right arytenoid cartilage, ventricle and band ventricles. In the examination of his neck, the patient had a level 3 mass on the right measuring $4 \times 3 \times 3$ cm that was fixed, painless and that had irregular borders and on the left at level 3 localization, there was a mass of $3 \times 3 \times 2$ cm that was hard and semi-mobile. Computed tomography (CT) of the neck identified a mass which originated from the supraglottic field that destroyed the thyroid cartilage at the glottic level and had extralaryngeal 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 post-operative week. While the patient was being prepared for the contralateral neck dissection, he developed cranial nerve VI and VII paralysis

From: ¹School of Medicine, Otolaryngology Department, Muğla Sıtkı Koçman University, Turkey, ²School of Medicine, Otolaryngology Department, University of Health Science, Turkey, ³School of Medicine, Otolaryngology Department, Lokman Hekim University, Turkey, ⁴ENT Clinic, Ankara City Hospital, Turkey and ⁵School of Medicine, Otolaryngology Department, Yıldırım Beyazıt University, Turkey.

Correspondence: Dr S Koseoglu, School of Medicine, Otolaryngology Department, Muğla Sıtkı Koçman University, Marmaris Yolu, Kötekli/Menteşe/Muğla, Turkey. Email: drskoseoglu@gmail.com

(Fig. 1). 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). Cranial magnetic resonance imaging (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° while extending to the geniculate ganglion (Fig. 3). 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 the 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 (Fig. 4). Contralateral neck dissection was not performed, and palliative chemotherapy was administered. The patient died nearly 1 year after establishing the diagnosis and 3 months after the identification of cavernous sinus metastasis.

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 a single foci. Multiple cerebral metastases are less often seen (8).

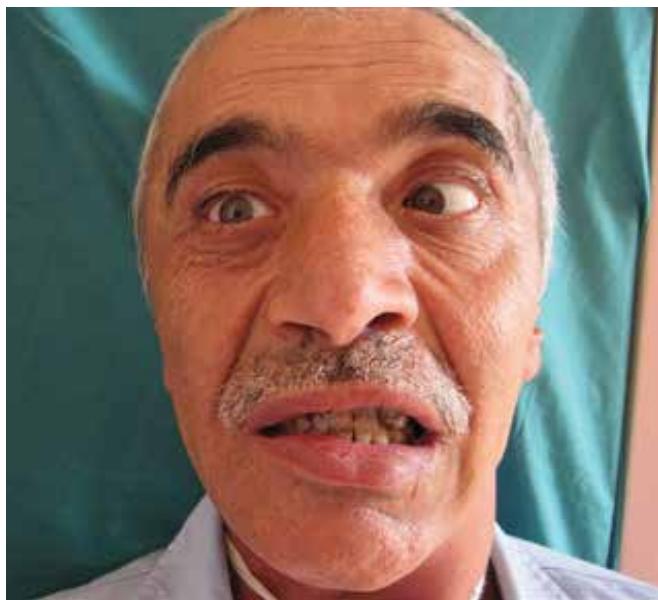


Fig. 1: Inward gaze limitation of the right eye and facial asymmetry.



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

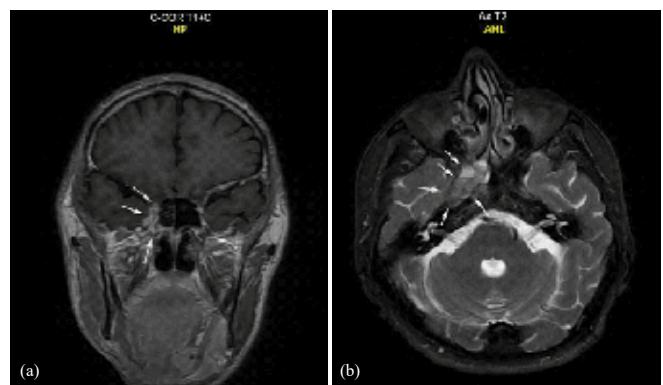


Fig. 3: (a) Gadolinium cranial MRI T1 coronal section shows contrast enhancing mass within the right cavernous sinus (marked with white arrows). (b) T2 axial section shows a mass surrounding the internal carotid artery from the anterior and resulting in the thickening of the right temporal dura.

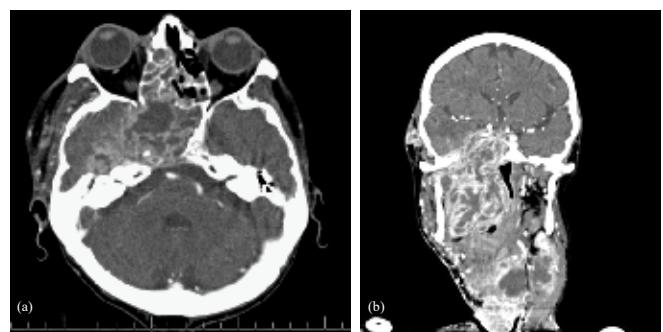


Fig. 4: (a and b) Cranial vs maxillofacial tomography of the massive metastatic mass extending to middle fossa and obliterating the right nasal cavity and paranasal sinuses on axial and coronal planes.

In a retrospective study performed in Amsterdam in 2001 on 21 patients with head and neck epidermoid carcinomas, the 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 1 to 3 months. The patients were treated with 1200–1600 cGy doses of radiotherapy (RT), and their survival was found to change between 2 and 14 months (7). For our case, the survival after the identification of cranial and cavernous sinus metastases was 3 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 the 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 the patients with cavernous sinus metastases, the survival rate can be limited to 2 to 3 months (7).

As surgery is not an option for the patients having cranial and cavernous sinus metastases, treatment consists of RT and chemotherapy. Pain control should be the goal. The patients with cranial metastases have an average survival rate of 1 month; if RT is given, this may extend the survival rate to 6 months (12). Stereotactic radiotherapy is preferred in patients with solid cranial metastasis as it can take the metastasis safely under control, decrease the morbidity and can improve the quality of life (13–15).

In laryngeal cancer patients, intracranial metastases should be considered when headache and/or ocular symptoms develop. In such a case, detailed neurological examinations should be performed and advanced imaging techniques should be used. Laryngeal cancer patients having intracranial metastases have very unfavourable prognoses, despite the administration of conventional or stereotactic RT survival is usually less than 6 months.

REFERENCES

1. Ferlito A, Shaha AR, Silver CE, Rinaldo A, Mondin V. Incidence and sites of distant metastases from head and neck cancer. *ORL J Otorhinolaryngol Relat Spec* 2001; **63**: 202–7.
2. Licita L, Bernier J, Grandi C, Locati L, Merlano M, Gatta G et al. Cancer of the larynx. *Crit Rev Oncol Hematol* 2003; **47**: 65–80.
3. Spector JG, Sessions DG, Haughey BH, Chao KS, Simpson J, El Mofty S et al. Delayed regional metastases, distant metastases, and second primary malignancies in squamous cell carcinomas of the larynx and hypopharynx. *Laryngoscope* 2001; **111**: 1079–87.
4. Probert JC, Thompson RW, Bagshaw MA. Patterns of spread of distant metastases in head and neck cancer. *Cancer* 1974; **33**: 127–33.
5. Leemans CR, Tiwari R, Nauta JJP, van der Wall I, Snow GB. Regional lymph node involvement and its significance in the development of distant metastases in head and neck carcinoma. *Cancer* 1993; **71**: 452–6.
6. Ishijima W, Takooda, Tokita N, Takayama S, Sakura M. Analyses of distant metastases in squamous cell carcinoma of the head and neck and lesions above the clavicle at autopsy. *Arch Otolaryngol Head Neck Surg* 1993; **119**: 65–8.
7. De Bree R, Mehta DM, Snow GB, Quak JJ. Intracranial metastasis in patients with squamous cell carcinoma of the head and neck. *Otolaryngol Head Neck Surg* 2001; **124**: 217–21.
8. Tsukada Y, Fouad A, Pickren JW, Lane WW. Central nervous system metastasis from breast carcinoma: autopsy study. *Cancer* 1983; **52**: 2349–54.
9. Max MB, Deck MD, Rottenberg DA. Pituitary metastasis: incidence in cancer patients and clinical differentiation from pituitary adenoma. *Neurology* 1981; **31**: 998–1002.
10. Zahra M, Tewfik HH, McCabe BF. Metastases to the cavernous sinus from primary carcinoma of the larynx. *J Surg Oncol* 1986; **31**: 69–70.
11. de Bree R, Mehta DM, Snow GB, Quak JJ. Intracranial metastases in patients with squamous cell carcinoma of the head and neck. *Otolaryngol Head Neck Surg* 2001; **124**: 217–21.
12. Alexander E 3rd, Moriarty TM, Davis RB, Wen PY, Fine A, Black PM et al. Stereotactic radiosurgery for the definitive, noninvasive treatment of brain metastases. *J Natl Cancer Inst*. 1995; **87**: 34–40.
13. Mehta MP, Rozental JM, Levin AB, Mackie TR, Kubasad SS, Gehring MA et al. Defining the role of radiosurgery in the management of brain metastases. *Int J Radiat Oncol Biol Phys* 1992; **24**: 619–25.
14. Flickinger JC, Kondziolka D, Lunsford LD. A multi-institutional experience with stereotactic radiosurgery for solitary brain metastasis. *Int J Radiat Oncol Biol Phys* 1994; **28**: 797–802.
15. Kihlstrom L, Karlsson B, Lindquist C. Gamma knife surgery for cerebral metastases. Implications for survival based on 16 years experience. *Stereotact Funct Neurosurg* 1993; **61**: 45–50.

© West Indian Medical Journal 2021.

This is an article published in open access under a Creative Commons Attribution International licence (CC BY). For more information, please visit https://creativecommons.org/licenses/by/4.0/deed.en_US.

