INTRODUCTION

So far, a few cases of Cavernous sinus metastasis (CSM) have been reported usually, the cases with CSM can be diagnosed by clinical presentation combined with computed tomography (CT) or magnetic resonance imaging (MRI), but not by biopsy. However, Lin et al. reported that CT guided fine-needle aspiration was useful to the diagnosis of masses involving the cavernous sinus. Because of the existence of concomitant primary tumor and poor prognosis, the surgical treatment is not suitable for CSM. Radiotherapy, including gamma knife radiosurgery, and chemotherapy are prescribed as a palliative therapy to improve local control and the life-quality of patients. We searched the Pubmed, and found only one case has been reported. Moreover, the gamma knife radiosurgery was not used for this case. In present investigation, it is reported that a case with cavernous sinus metastasis.

KEY WORDS: Hypopharyngeal, Squamous cell carcinoma, Cavernous sinus, Metastasis, Gamma knife radiosurgery.

CASE REPORT

A 57-year-old Chinese man with a mass in the right neck was admitted to the Second Affiliated Hospital, School of Medicine, Zhejiang University in March 2008. Physical examination showed a fixed node of 2.5 x 3.5 cm in the right carotid triangle. Under a hard laryngoscope, we found an exogenous lesion occupying the entire right piriform fossa with the right fixed vocal fold. CT scan of the head and neck showed a mass in the right piriform fossa and some positive nodes at II and III levels in the right
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neck without extending into carotid arteries. Biopsy revealed a poorly differentiated squamous cell carcinoma (SCC). The diagnosis indicated that the patient suffered from a hypopharyngeal carcinoma (T3N2bM0). Radical dissection of the right neck and excision of the total larynx, right pyriform fossa and part of the right thyroid gland were performed.

In a month after the surgery, the patient received radiotherapy to the hypopharynx and neck (levels 1, 2, 3, 4) with a dose of 7000 cGy in 35 fractions over seven weeks.

Three months later, the patient presented with progressive right ophthalmalgia. No tumor or lymphatic nodes were found in the pharynx and nasopharynx or in the cervical region. CT scan showed no positive changes in the orbit and cavernous sinus. After 6 months, MRI revealed a mass in the right cavernous sinus (Figure 1-A, B) due to the metastasis of hypopharyngeal carcinoma. The patient was treated with gamma knife radiosurgery at the dose of 3200cGy for central part and the dose of 1600cGy for surrounding part. In 3 months after the treatment, ophthalmalgia, abduction disorder and blepharoptosis were improved and the mass in the right cavernous sinus dwindled as was shown by MRI (Figure 1-C, D). Ten months later,

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these signs including the mass reappeared (Figure-2-A, B). The patient was treated with the therapy again at the double dose. In three months after the treatment, symptom improved again, and the mass in the right cavernous sinus dwindled once more (Figure-2-C). After 17 months, the patient complained of right headache, and MRI revealed that the tumor had extended into the right temporal bone (Figure-3). X-ray and PET showed metastases of hypopharyngeal squamous cell carcinoma to the abdomen and lungs, but the tumor was not found in the neck or hypopharynx. The patient died after 29 months post surgically.

**DISCUSSION**

Primary tumors of the head and neck area, including laryngeal squamous cell carcinoma and oropharyngeal squamous cell carcinoma, rarely bring CSM. The risk of distant metastases is influenced by age, site of primary cancer, local and/or regional extension, grading, and locoregional control. Moreover, most distant metastases become clinically apparent in two years after diagnosis of the tumor. CSM could occur by direct extension, hematogenous spread and perineural infiltration, with symptoms of diplopia, blepharoptosis, ophthalmoplegia, dysesthesias, headache, retroorbital pain and facial pain. In some patients, Horner syndrome appeared.

Lin et al reported CT guided fine-needle aspiration could be useful in the diagnosis and management of masses which were involved in the cavernous sinus. In the present study, contrast enhanced high resolution CT represented the imaging procedure of choice for metastatic disease to the cavernous sinus. MRI is more accurate because of its capacity for detecting the primary or metastatic tumors and thrombosis in the cavernous sinus. Contrast-enhanced 3D-FIESTA (3D-fast-imaging employing steady-state acquisition MR imaging) is powerful for the assessment of cranial nerves in and around the cavernous sinus with tumor involvement, even the trigeminal nerve with tumor involvement was easily identified in the cavernous portion.

General radiotherapy is frequently used for the treatment of CSM, with a clinical improvement. Gamma knife radiosurgery is recognized widely as the preferred treatment method for brain tumors, and the metastatic tumor in the cavernous sinus is highly sensitive to it. Thus the tumor shrinks markedly on MRI in 2-3 months after the therapy. After treatment with gamma knife radiosurgery, ophthalmalgia, abduction disorder and blephroptosis were improved in this case, and the mass of the right cavernous sinus shrunk markedly as was shown by MRI.

The median survival of three to six months is referred for patients treated with general radiotherapy in contrast to one month for untreated patients. The present patient died 23 months later after gamma knife radiosurgery. We consider that gamma knife radiosurgery is feasible in patients with CSM, and it may be more effective in the treatment of patients with CSM, even those with recurrent cases.

**REFERENCES**


**Authors Contribution:**
Ming Chen, MD, Attending, Assistant Professor, designed the study and prepared draft. Honggang Duan, MD, Fellow, managed therapy and collection of data. Lin Xu, MD, Fellow, managed therapy and drafted the manuscript. Ting Chen, MD, managed therapy of Gamma knife radiosurgery.