Case Report

Journal Homepage: http://crcp.tums.ac.ir

A Malignant Solitary Fibrous Tumor of the Parotid Gland: A Case Report

Saeed Sohrabpour, Reza Erfanian, Ebrahim Karimi, Farrokh Heidari*

Otorhinolaryngology Research Center, Tehran University of Medical Sciences, Tehran, Iran.

Use your device to scan and read the article online

Citation: Sohrabpour S, Erfanian R, Karimi E, Heidari F. A Malignant Solitary Fibrous Tumor of the Parotid Gland: A Case Report. Case Reports in Clinical Practice. 2021; 6(1):25-28.

Running Title: A Malignant Solitary Fibrous Tumor

Article info:

Received: 02 Jan 2021

Revised: 24 Jan 2021

Accepted: 11 Feb 2021

Keywords:

Solitary fibrous tumor; Hemangiopericytoma; Parotid gland neoplasm; Major salivary glands tumor

ABSTRACT

A Solitary Fibrous Tumor (SFT) is a soft tissue tumor that appears exceedingly rare in the parotid gland. The literature review suggested that approximately 12%-22% of these cases behave aggressively. Besides, only 4 cases of histological malignant parotid gland SFT are reported in the English literature. We presented a 65-year-old cigarette-smoker man with a fix and tender mass over the left parotid and submandibular areas. On physical examination, the marginal branch of the facial nerve was paralyzed. The left total parotidectomy and neck dissection levels 1 and 2 were performed with preoperative embolization procedure and adjuvant radiotherapy for the patient. The results of the follow-up examination were unremarkable after 11 months. In this case report, we aimed to increase awareness on SFTs, although rare, among clinicians and pathologists. Accordingly, it should be considered in the differential diagnosis of soft-tissue tumors in the major salivary glands for better management.

Introduction

Solitary Fibrous Tumor (SFT)-Hemangiopericytoma (HPC) spectrum was first described in the pleura in 1931 [1]. It has been revealed that this neoplasm may have multiple different extrapleural origins, including the head and neck regions [2].

Approximately 6% of SFT developing in the head and neck regions and the most common sites involved are the sinonasal tract and orbit. SFT and HPC very rarely occur in the parotid gland; the published data by 2019 only reported 40 cases of SFT in major salivary glands [3].

However, SFT can have benign and malignant clinical courses with metastatic potential. Furthermore, a review of the literature indicated that approximately 12%-22%

*** Corresponding Author:**
Farrokh Heidari, MD and MPH.
Address: *Otorhinolaryngology Research Center, Tehran University of Medical Sciences, Tehran, Iran.*
E-mail: *farrokh.heidari@yahoo.com*

behave aggressively; only 4 cases of histological malignant parotid gland SFT are reported in the English literature [4].

Here, we presented an additional case of malignant SFT involving the left parotid gland. We focused on the clinical presentation, imaging, treatment, and review of the available literature regarding this rare tumor.

Case Presentation

A 65-year-old cigarette-smoker man presented with a fix and tender mass over the left parotid and submandibular area for 6 months. The tumor has grown more rapidly in the last three months. Two months before the patient's admission, the mass was biopsy-proven at another healthcare center. Accordingly, its pathology was suggestive of malignant HPC with extensive necrosis. Then, he was referred to our center for further treatment.

The patient reported a history of thyroid surgery for multinodular goiter 4 years ago and used levothyroxine at the time of referral. He had no other significant medical or surgical histories.

Physical examination data indicated a 10-cm, firm, lobulated, tender, and immobile left parotid mass, i.e. fixed to the underlying structures. As per Figure 1, the overlying skin demonstrated ulceration and inflammation. The marginal branch of the facial nerve was paralyzed, but other branches were healthy. There was no palpable cervical lymph node.

Preoperative head and neck intravenous Computed Tomography (CT) scan revealed an 11.3×10.7 cm, irregular, hypodense, and lobulated mass over the left parotid gland, submandibular, and masticator space extended to neck area with peripheral and heterogeneous enhancement. CT scan also demonstrated the permeative bony destruction of the lingual and buccal cortex of the mandible that suggested a malignant tumor (Figure 2).

Two days before the surgery, a preoperative embolization procedure was performed for the patient in the radio-intervention department; subsequently, the tumor-feeding vessels (facial artery) were blocked. Then, the left total parotidectomy and neck dissection levels 1 and 2 were performed using an intraoperative neuromonitoring system (Figure 3). The marginal branch of the facial nerve was scarified due to complete tumor resection. Other branches recovered uneventfully.

Gross histopathological examination results revealed that the received specimen consists of tan-gray color soft tissue measuring 11×10×8 cm that was partially covered by skin tissue (M: 10×8 cm) as well as a piece of bony (M: 5×3×2.5 cm) with one brownish mass.

Microscopically, the tumor had a low-grade and a high-grade area with extensive hemorrhage and necrosis. I was composed of the short fascicles of plump spindle cells with little intervening fibrous stroma. Tumor cells had moderate nuclear atypia with pleomorphism, hyperchromasia, and a high N:C ratio. The mitotic rate was identified to be >5 per 10 High-Power Fields (HPF), and atypical mitosis was observed. Immunohistochemical (IHC) studies data on neoplastic cells were positive for CD 34 and STAT 6; however, the same were negative for keratins, smooth muscle actin, CAM5.2, p63, S100 protein, and CD3. A diagnosis of a solitary fibrous tumor of the parotid gland was established. Accordingly, the patient was referred for adjuvant radiotherapy. The follow-up examination result was unremarkable after 11 months.

Discussion

SFT is a soft tissue tumor and rare group of spindle-cell tumors. According to the WHO classification of soft tissue and bone tumors, it is synonymous with giant cell angiofibroma and hemangiopericytomas since 2013 [5, 6]. SFT appears exceedingly rare in the parotid gland; including our patient, only 35 cases are reported in English literature [3, 4].

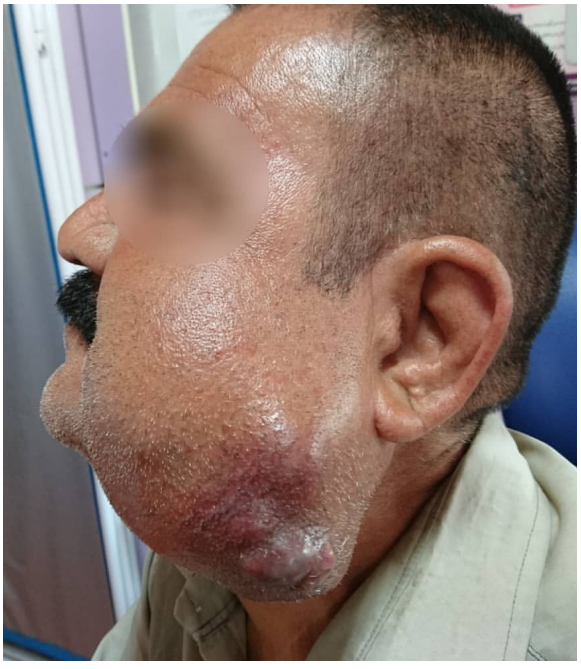

Figure 1. Patient with a 10 cm, firm, lobulated, tender, and immobile left parotid mass fixed to the underlying structures and ulceration on the overlying skin

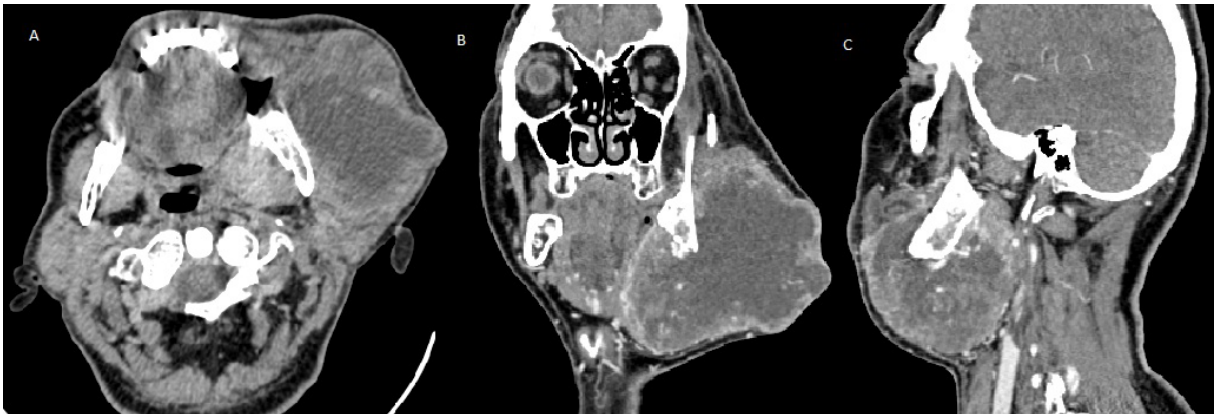

Figure 2. Neck CT acquisition

Reconstruction at: A. Axial plane, B. Coronal, and C.Sagittal Plane after iodinate contrast administration depicts an 11.3×10.7 cm, irregular, hypodense, and lobulated mass over the left masticator space extended to neck area with heterogeneous enhancement. CT scan also demonstrated the permeative bony destruction of the lingual and buccal cortex of the mandible.

Clinically, these tumors usually present as painless, firm, well-defined, and slow-growing masses. Pathologically, they are described in the literature as "fibrous variants" with had mostly benign cellular features [7, 8].

Radiographic findings are also nonspecific. On CT-scan, SFTs usually are hyperintense mass with heterogeneous enhancement after contrast administration, respecting adjacent tissues. Magnetic resonance imaging usually signifies isointense mass on T1-weighted images as well as high-signal intensity with enhancement on T2-weighted images [9, 10].

However, our case had malignant clinical, pathological, and radiological features. The patient presented with a fixed and tender mass as well as paralyzed facial nerve branch. The tumor demonstrated the permeative bony destruction of the mandible on a CT scan, which suggested a malignant tumor. The mitotic rate was high and atypical mitosis was observed, which convinced the pathologist to diagnose malignant SFT.

Parotid SFTs, like other anatomic sites, present malignant features, so rarely. Our patient is the fifth case of malignant parotid SFT reported to date. The first report-

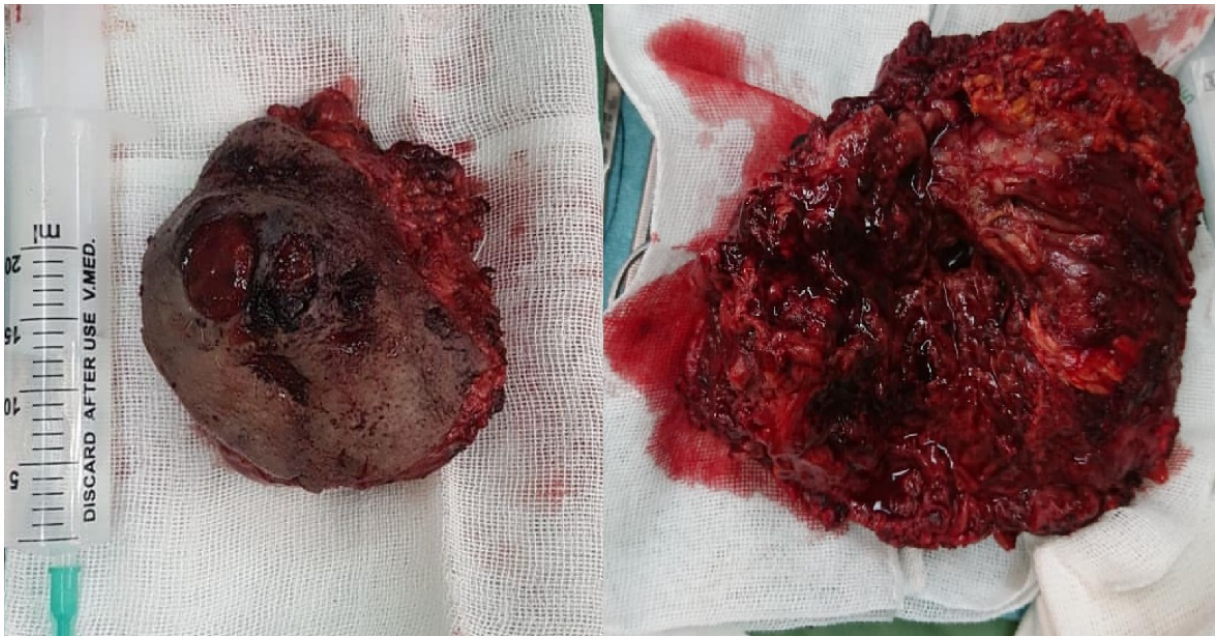

Figure 3. Specimen after left total parotidectomy and neck dissection levels 1 and 2

Consisted of tan-gray color soft tissue measuring 11×10×8 cm that was partially covered by the skin tissue.

ed case was a 20-year-old woman described by Suárez Roa Mde and et al., in 2004 [11]. In 2009 and 2011, two other cases were reported, including a 54-year-old male and a 78-year-old female, respectively [2, 12]. Recently Ken-Liao Liu presented a 33-year-old woman with malignant parotid SFT [4]. One case had pulmonary metastasis at the time of diagnosis, but other cases, like ours, manifested no evidence of recurrence or metastasis at almost 1-year post-treatment follow-up examinations.

Conclusion

The first choice of treatment for the discussed tumor is complete excisional surgery (total parotidectomy) with negative margins and postoperative radiation and chemotherapy. Preoperative embolization can be performed in highly-vascular tumors, like our patient [13].

Ethical Considerations

Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

Funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

Conflict of interest

The authors declared no conflicts of interest.

References

[1] Gengler C, Guillou L. Solitary fibrous tumour and haemangiopericytoma: Evolution of a concept. Histopathology. 2006; 48(1):63-74. [DOI:10.1111/j.1365-2559.2005.02290.x] [PMID]

[2] Yang X, Zheng J, Ye W, Wang Y, Zhu H, Wang L, et al. Malignant solitary fibrous tumors of the head and neck: A clinicopathological study of nine consecutive patients. Oral oncology. 2009; 45(8):678-82. [DOI:10.1016/j.oraloncology.2008.10.013] [PMID]

[3] Lim DWJ, Tan TSH, Tan JL, Venkateswaran K. Solitary fibrous tumour of the parotid gland: A case report and a 15-year literature review. AME Case Reports. 2019; 3:14. [DOI:10.21037/acr.2019.04.05] [PMID] [PMCID]

[4] Lee C-K, Liu K-L, Huang S-K. A dedifferentiated solitary fibrous tumor of the parotid gland: A case report with Cytopathologic findings and review of the literature. Diagnostic Pathology. 2019; 14(1):20. [DOI:10.1186/s13000-019-0792-6] [PMID] [PMCID]

[5] Fletcher CDM. The evolving classification of soft tissue tumours: An update based on the new 2013 WHO classification. Histopathology. 2014; 64(1):2-11. [DOI:10.1111/his.12267] [PMID]

[6] Fletcher CDM. The evolving classification of soft tissue tumours: An update based on the new WHO classification. Histopathology. 2006; 48(1):3-12. [DOI:10.1111/j.1365-2559.2005.02284.x] [PMID]

[7] Yu R, Rebello R. Solitary fibrous tumor of the parotid gland: A case report. Iranian Journal of Otorhinolaryngology. 2015; 27(82):401-5. [PMID] [PMCID]

[8] Kwok MM, Subramaniyan M, Chan SW. Solitary fibrous tumour of the parotid gland: A case report and review of the literature. Case Reports in Otolaryngology. 2015; 2015:741685. [DOI:10.1155/2015/741685] [PMID] [PMCID]

[9] Bauer JL, Miklos AZ, Thompson LD. Parotid gland solitary fibrous tumor: A case report and clinicopathologic review of 22 cases from the literature. Head and Neck Pathology. 2012; 6(1):21-31. [DOI:10.1007/s12105-011-0305-8] [PMID] [PMCID]

[10] Guerra MFM, Amat CG, Campo FR, Pérez JS. Solitary fibrous tumor of the parotid gland: A case report. Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, and Endodontology. 2002; 94(1):78-82. [DOI:10.1067/moe.2002.121990] [PMID]

[11] Suárez LRM, Ruíz LGR, Meneses AG, Granados-García M, Mosqueda AT. [Solitary fibrous tumor of the parotid region: Report of a case and review of the literature (English and Spanish)]. Medicina Oral: Organo Oficial de la Sociedad Espanola de Medicina Oral y de la Academia Iberoamericana de Patologia y Medicina Bucal. 2004; 9(1):82-8. [PMID]

[12] Messa-Botero OA, Romero-Rojas AE, Olaya SIC, Díaz-Pérez JA, Tapias-Vargas LF. [Primary malignant solitary fibrous tumor/hemangiopericytoma of the parotid gland (Spanish)]. Acta Otorrinolaringologica Espanola. 2011; 62(3):242-5. [DOI:10.1016/j.otorri.2010.02.007] [PMID]

[13] Rais M, Kessab A, Sayad Z, El Mourabit S, Zrarqi R, Benazzou S, et al. Solitary fibrous tumor occurring in the parotid gland: A case report. BMC Clinical Pathology. 2017; 17(1):22. [DOI:10.1186/s12907-017-0062-z] [PMID] [PMCID]