Introduction

Warthin tumor (WT) is an unusual entity first reported in the English literature by pathologist Aldred Scott Warthin in 1929.1 WT is a salivary neoplasm accounting for 3%–17% of all parotid tumors and is the second most common benign salivary tumor after pleomorphic adenomas.1,2 WT is encapsulated and has a unique histology composed of cystic and solid areas with both oncocytic epithelium and lymphoid stroma components. WT typically presents in the inferior pole of the parotid gland and much less commonly in the submandibular gland or cervical lymph nodes as a painless, soft, and smooth mass that can be fluctuant on palpation.1–3 WT can be multicentric in 12%–20% of cases, either metachronous or synchronous, and is seen bilaterally in 5%–14% of patients.2–4 There have been rare presentations of WT in a minor salivary gland of the buccal mucosa, hard palate, lip, and oropharynx.4–7 Here, we discuss a case of WT arising from a minor salivary gland in the oropharynx in a patient with a history of a unilateral parotid WT and conduct a brief review of the current literature.

Case report

A 71-year-old Hispanic male was referred for a 2-month history of dysphagia and left oropharyngeal fullness in early 2014. His past medical history was significant for hypertension, dyslipidemia, atrial fibrillation, and WT of the left parotid gland in 2008 (Figure 1(a) and (b)) for which he received a left superficial parotidectomy and developed Frey syndrome (Figure 1). He was currently smoking with a history of 27.5 pack years. Physical examination was significant for left oropharyngeal soft palate fullness without ulceration.

MRI studies of the head and neck showed a small, submucosal ovoid shaped nodule, 8 mm in diameter, with a peripheral ring of enhancement of the left oropharyngeal airway (Figure 2(a)–(c)) (Figure 2). A more careful review of pre-parotidectomy imaging revealed the presence of the oropharyngeal lesion at that time (Figure 1(b)). Surgical excision was recommended for diagnostic and curative purposes. The patient underwent excision of the mass with a 3 mm margin. Surgical pathology of this specimen was reported as WT (Figure 3(a) and (b)) (Figure 3).

Abstract

Warthin tumor is the second most common benign salivary gland tumor that classically arises in the parotid gland. It can be synchronous, metachronous, multifocal, bilateral, or unilateral, which complicates diagnosis and management. Rare cases of Warthin tumor of the minor salivary gland are described, but no cases of unilateral, synchronous Warthin tumor involving the parotid and minor salivary gland have been reported. We present a case of Warthin tumor arising from a minor salivary gland in the left oropharynx of a 71-year-old male with a previous history of left parotid Warthin tumor, later determined to be synchronous.

Keywords

Warthin tumor, minor salivary glands, tumors of oropharynx, salivary gland tumors, oropharynx

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There were no complications in the postoperative period and no evidence of recurrence.

Discussion

Salivary gland tumors are 2%–6.5% of all head and neck neoplasms occurring in both major and minor salivary glands. The second most common tumor of the salivary gland is WT, most commonly arising in the parotid gland. A recent retrospective study assessing 779 salivary gland tumors showed 100% of WT were present in the parotid gland. A similar study with 1065 cases of salivary gland tumors showed that 98.5% of WT presents in the parotid and 1.5% presents in the submandibular gland with no reported cases in the sublingual gland or minor salivary glands. In a study of 737 minor salivary gland tumors, only one case of WT was found accounting for approximately 0.1% tumors of the minor salivary glands.

On histological examination, WT is encapsulated and composed of solid and cystic areas with two key components. First is a bilayer of oncocytic epithelial cells that develops cystic structures and papillary projections with increased amount of mitochondria that are densely packed, showing abnormal size and shape. Second is a stromal component of lymphoid tissue that can contain germinal centers. There are two main theories that exist about the origin of WT. The first is the hypothesis of heterotopia which says that the lack of parotid capsule early in development results in ductal elements becoming entrapped within developing lymphoid tissue. The second is that WT is an adenoma with associated lymphocytic infiltration suggesting that there is an immune or hypersensitivity reaction to the epithelial cells present within the tumor.

The pathogenesis involved in the development of WT is currently unclear. One study suggested that EBV may play a role but subsequent studies have failed to support this finding. Smoking has also been explored as a trigger for the
development of WT. It has been proposed that smoking and development of reactive oxygen species causes damage to the mitochondrial DNA. This is supported by structural mitochondrial abnormalities and a high rate of deleted mitochondrial DNA present in the oncocytic cells of WT.\(^3\) Radiation exposure and autoimmune disorders have been implicated in the development of WT, but the connection must be further defined.\(^2,4\)

WT normally presents after the age of 40, with the mean age of diagnosis being 62.\(^2,4\) The gender distribution of WT has shifted from a male-to-female ratio of 10:1 in the 1950s to a current mild male predominance. This is attributed to the strong association between WT and smoking and the increased numbers of female smokers.\(^2\) Parotid WT normally presents as a slow growing, smooth, fluctuant mass that is located in the inferior lobe of the parotid gland.\(^1,2\) A differential diagnosis of parotid WT should include other parotid tumors, lymph node enlargement, or branchial cysts.\(^1\)

In a previously published case report, 22 cases of WT arising in the minor salivary gland were presented. The mean age of presentation was 58.5 with a range of 42–81 years old and the gender distribution was 13 men and 9 women. The sizes of WT ranged from 0.5 to 4.0 cm. Varying clinical diagnoses were given with salivary gland tumor or mucocele in most cases. A history of smoking was seen in three out of the four patients where it was reported. The sites affected include eight cases in the buccal mucosa, seven cases in the hard palate, six cases in the lip, and one in the oropharynx.\(^4\) Our current case is the second reported oropharyngeal minor salivary gland WT. The other case is reported in a 58-year-old female.\(^7\)

To our knowledge, there have been no other publications that report a unilateral, synchronous presentation of WT in the parotid gland and minor salivary gland. The incidence of unilateral, synchronous parotid WT was determined to be 0.04%.\(^10\) In this case, 6 years elapsed between the diagnosis of parotid WT and minor salivary gland WT. Originally, it was unknown if the WT of the minor salivary gland was synchronous or metachronous because of the time period between diagnoses. The CT performed in 2008 showed evidence of a much smaller left oropharyngeal lesion, classifying it as a synchronous presentation. Over the next 6 years, the lesion grew in size until it became symptomatic and required further evaluation. This suggests that the incidence of synchronous tumors could be underestimated.

A tentative diagnosis of WT can be made by ultrasound examination and fine needle aspiration cytology.\(^1\) An additional diagnostic test includes a scintigram with radioisotope technetium 99m, which would show WT as a “hot spot” due to increased uptake.\(^1,2\) The treatment for WT is primarily surgical, either with a superficial parotidectomy or enucleation of the tumor.\(^1,2\) For WT of the minor salivary gland, the treatment of choice is local excision.\(^4\) After excision, the recurrence rate is approximately 2%–5.5% in parotid WT, which is thought to be due to multifocality of WT.\(^2\) Recurrence in WT of the minor salivary gland has only been reported in two cases, recurring at 3 weeks and 1 month after excision.\(^4,5\)

**Conclusion**

We can conclude that WT is a benign tumor that primarily occurs in the parotid gland, with rare reported cases of WT in the minor salivary glands of the buccal mucosa, hard palate, lip, and oropharynx.

This case presents a previously undetected unilateral, synchronous presentation of WT in the parotid and minor salivary gland of the oropharynx. Clinicians should include
WT on their differential diagnosis of an oropharyngeal mass especially in an individual with a previous history of WT.

Even though the minor salivary gland WT was synchronously present with the parotid WT, it was undetected at the time. This could be explained by the atypical location of the minor salivary gland WT. Adequate follow-up after original diagnosis and treatment would be beneficial to patients with WT because of the possibility of metachronous tumors or undetected synchronous tumors arising after prolonged time intervals.

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