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Foreign body granuloma in the tongue differentiated from tongue cancer: Case report

Zhen-Hua Jiang, Ran Xv, Li Xia

Abstract**BACKGROUND**

Embedded foreign bodies in the tongue are rarely seen in clinical settings. An untreated foreign body can cause a granuloma, which often presents as an enlarged tongue mass. However, if foreign body ingestion status is unknown, physical examination and magnetic resonance imaging (MRI) tend to lead to suspicion of tongue cancer, especially in older patients. Thus, differential diagnosis of an enlarged tongue mass is important, especially because it is closely related to the choice of treatment method.

CASE SUMMARY

A 61-year-old woman was admitted to hospital with pain and noticeable swelling in the tongue that had persisted for over 1 mo. She had no previous medical history. MRI revealed abnormal signal intensities that were indicative of a neoplasm. Thus, the oral surgeon and radiologist arrived at a primary diagnosis of tongue cancer. The patient visited the Ear Nose and Throat Department for further consultation and underwent an ultrasound examination of the tongue. The ultrasonography was consistent with a linear hyperechoic foreign body, which was indicative of an embedded foreign body (bone) in the tongue, even though the patient denied any history of foreign body ingestion. Complete surgical enucleation of the lesion was conducted. The mass, which included a fish bone, was completely removed. The post-operative pathological examination confirmed that the mass was a granuloma containing collagen fibers,

macrophages, and chronic inflammatory cells. The patient recovered without complications over a 2-month follow-up period.

CONCLUSION

We report a rare case of foreign body granuloma in the tongue that was primarily diagnosed as tongue cancer. The MRI and ultrasound examinations revealed a piece of bone in the left lateral aspect of the tongue. The granuloma, which contained a fish bone, was completely removed *via* surgery and confirmed *via* biopsy. Differential diagnosis of the enlarged tongue mass was critical to the selection of treatment method.

Key Words: Tongue; Foreign body; Granuloma; Cancer; Differential diagnosis; Case report

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Core Tip: This case report concerns an older adult referred to our Ear Nose and Throat Department with an enlarged tongue mass and a primary diagnosis of tongue cancer after magnetic resonance imaging (MRI). A review of the MRI data and oral ultrasound examination diagnosed a foreign body granuloma, confirmed by surgery and postoperative pathological examination. Oral ultrasound and/or CT are critical in terms of differential diagnosis; certain MRI features may provide clues guiding diagnosis of a foreign body granuloma.

INTRODUCTION

The introduction of a foreign body into the tongue can occasionally occur as food is being chewed. In most situations, this can lead to pain, swelling, and irritation [1]. Such foreign bodies can usually be identified and diagnosed *via* visual inspection, especially if they are not buried in the muscle layer [2]. A clear history of foreign body introduction

into the mouth, as well as a timely visit to the physician, can be conducive to the diagnosis [3]. Penetration of the tongue by a foreign substance can cause an acute inflammatory response, and foreign bodies that remain in place may elicit a granulomatous inflammatory response [4]. The cause of granuloma in the tongue can be difficult to ascertain, especially without a clear history of foreign body ingestion. In this paper, we describe the case of a foreign body granuloma in the tongue of a Chinese woman. The initial diagnosis was tongue cancer, but further examination revealed a foreign body in the tongue, which was removed *via* surgery.

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CASE PRESENTATION

Chief complaints

A 61-year-old woman was admitted to the Ear Nose and Throat (ENT) Department of our hospital complaining of pain and noticeable swelling of the tongue.

History of present illness

The patient sought out a general practitioner because of pain and noticeable swelling in the tongue that persisted for over 1 mo. She was given a short course of antibiotics, which provided no symptom relief. The patient was referred to the Department of Stomatology, where an oral surgeon prescribed oral maxillofacial magnetic resonance imaging (MRI). The imaging revealed abnormal signal intensities, as shown in Figure 1, which are indicative of tongue cancer. The patient then visited the ENT Department for further consultation.

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History of past illness

The patient had no previous medical history.

Personal and family history

There was no specific personal and family history.

Physical examination

Intraoral examination showed mild swelling in a longitudinal 2 × 1.5 cm area on the left lateral aspect of the tongue. A hardened nodule with an ill-defined margin was found on the tongue. The nodule was the same color as the surrounding tongue tissue (normal color), and no clearly identifiable foreign bodies were observed on the tongue, as shown in Figure 2.

Laboratory examinations

The results of routine tests of complete blood count, kidney function, and liver function were normal.

Imaging examinations

The oral maxillofacial MRI showed abnormal and ill-defined signal intensities on the left side of the tongue (size: 1.6 cm × 1.2 cm × 2.0 cm; Figure 1) and multiple swollen cervical lymph nodes (up to 0.7 cm in size, in the submaxillary region and carotid sheath). The primary diagnosis was tongue cancer, as reported by the specialists in the Department of Radiology. However, the doctors in the ENT Department reviewed the MRI images and considered the possibility of foreign body granuloma for two reasons. First, granuloma and cancer can have similar imaging features; and second, the shadow seemed to indicate that the tongue tissue was protected from foreign bodies, as shown by images taken in the transverse plane. During the initial clinical interview, the patient denied a history of foreign body ingestion. To differentiate between the two possibilities, further examinations were conducted.

Further diagnostic work-up

The patient was referred for ultrasound examination of the tongue. The ultrasound device used a linear probe with a 13-MHz transducer. The acoustic picture was consistent with a linear hyperechoic foreign body, specifically a piece of bone, as shown in Figure 3. When asked about the possibility of fish bone ingestion or another foreign

body in the tongue, the patient could not recall whether she had recently eaten fish. However, her daughter recalled that a meal containing fish (with bones) might have been served to the patient 2 mo prior to seeking medical assistance. Complete surgical enucleation of the lesion was then conducted. The mass with the fish bone was completely removed without compromising the capsule (Figure 4A), and no hemorrhagic accident occurred. The fish bone was 1.5 cm in length (Figure 4B). Post-operative pathological examination showed that the lesion was a granuloma containing collagen fibers, macrophages, and chronic inflammatory cells.

MULTIDISCIPLINARY EXPERT CONSULTATION

N/A

FINAL DIAGNOSIS

Foreign body (fish bone) granuloma in the tongue.

TREATMENT

After the surgery, the patient received antibiotics (ceftriazone) with systemic steroids and the post-operative recovery was uneventful. The patient was discharged on the third post-operative day.

OUTCOME AND FOLLOW-UP

The patient recovered well and there were no complications during the 2-month follow-up period.

DISCUSSION

A diagnosis of tongue cancer is often considered in older adults with an enlarged tongue nodule/mass and localized pain [5]. The many differential diagnoses of a tongue mass include an inflammatory lesion and schwannoma [1]. A diagnosis of a granuloma attributable to an embedded foreign body is rare when there is no clear history of

foreign body ingestion or oral trauma [6]. In the present case, the differential diagnosis of an irregular nodule with a smooth surface included cavernous hemangioma, anaplastic large-cell lymphoma, endophytic squamous cell carcinoma and Kaposi sarcoma of the tongue [7-10]. Differential diagnosis is important as cancer treatment and enucleation of a foreign body granuloma differ greatly in terms of surgical preparation, operation, tongue reconstruction, and patient consultation [11-13].

MRI is the preferred diagnostic modality for evaluating tongue cancer because abnormal MRI signals have been strongly associated with pathological findings [14]. However, MRI is not an ideal modality for differentiating tongue cancer from embedded foreign body granuloma with foreign body [15]. The signals associated with tongue cancer are hyperintensity in a T2-weighted image (WI) and heterogeneous enhancement in an enhanced T1 WI, similar to granuloma [14, 16]. In the present case, the fish bone (shown by hypointense signals in both the T1 and T2 WIs) was difficult to detect by MRI [17], and not surprisingly the primary diagnosis of tongue cancer was consistent with the abnormalities found in the tongue by MRI and with the swollen cervical lymph nodes. Besides this, shifting of metal fragments under the effects of MRI can result in potential damage of vital structures. If the doubt of a metal foreign body is present, the contraindications of MRI should be considered [18].

Several studies used ultrasound to detect a suspected embedded foreign body in the tongue [3, 4, 6]. The foreign bodies, which included a pequi spine, metal wire, and fish bone, were visualized and localized accurately, demonstrating the utility of ultrasound for guiding therapeutic interventions. Multislice computerized tomography (MSCT) and cone beam computerized tomography (CBCT) also seem useful for visualizing embedded foreign bodies, although CTs have poor performance in terms of detecting wood [15]. Thus, when an embedded foreign body is suspected in a patient with an enlarged tongue mass, ultrasonography and CT can play an important role in the differential diagnosis [19].

In our case, the lesion was “walled off” on transverse images (Figure 2A and 2B). This might indicate that the mass was “delimited” by a capsule. A similar sign was observed

in an early case report of a patient with foreign body granuloma ^[16]. Thus, this sign might be a useful indicator of the need for further examinations (other than MRI). However, this issue requires further investigation.

CONCLUSION

We reported the case of a woman with an enlarged tongue mass initially diagnosed with tongue cancer. The ENT specialists reviewed the MRI data and corrected the diagnosis to 'foreign body in the tongue' based on oral ultrasound examination. The granuloma containing the fish bone was completely removed during surgery and post-operative pathological examination confirmed that the lesion was a granuloma. In cases with an enlarged tongue mass, oral ultrasound and/or CT examinations are important for differential diagnosis, to facilitate selection of the appropriate treatment method.

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