

A Tongue Granuloma Due to a Fishbone Mimicking a Neoplasm: Ultrasound-Guided Differential Diagnosis

Introduction

Fishbones are the most commonly swallowed foreign body and are found mostly in the tonsil, soft palate, tongue base, vallecula, posterior pharyngeal wall and upper esophagus. In most cases,



Fig. 1 Photograph of the tongue. The photograph shows a mass with a 1.5 cm diameter on the ventral surface of the left tongue base of a 77-year-old male (arrow).

Abb. 1 Fotografie der Zunge. Die Fotografie zeigte eine Raumforderung mit 1,5 cm Durchmesser auf der ventralen Oberfläche der linken Zungenhälfte bei einem 77 Jahre alten Mann (Pfeil).

the fishbone could be safely removed in the emergency department. Few cases showed a fishbone totally embedded in the mobile tongue presenting as an enlarged mass that was mistaken for a neoplasm due to the lack of any history of oral trauma (Wang Y et al. Oral Surgery 2008; 1: 220-222). These cases were diag-

nosed by incisional biopsy instead of ultrasound examination which played an important role in the diagnosis of foreign bodies in soft tissue. Here, we present one similar case that was diagnosed by ultrasound before surgery.

Case report

A previously healthy 77-year-old male was admitted to the hospital because of an enlarged tongue mass for five months. There was no pain, no dysphagia, and no neuromuscular disturbance. Physical examination showed a mass with a diameter of 1.5 cm in the left tongue base (Fig. 1). The mass was firm, circumscribed, with an unclear boundary and no tenderness. The tongue mucosa was intact and of normal color. An ear, nose, throat, and systemic examination also did not reveal any abnormality

Magnetic resonance imaging (MRI) was performed prior to and after the administration of gadolinium contrast agent (Magnevist, Schering, Germany) by a 1.5 T scanner (Signa Excite, GE Medical Systems, Milwaukee, WI). T 1-weighted imaging demonstrated a round isointensive mass with an ill-defined margin in the left tongue base (Fig. 2a). The mass signal was heterogeneous and slightly hyperintensive compared to the tongue tissue in T 2WI (Fig. 2b). It was heterogeneously enhanced with a relatively well-defined edge after venous injection of contrast media (Fig. 2c). The enhanced coronal T 1WI (Fig. 2d) showed that the mass was enhanced with a pattern of target sign. To identify lymph node metastases, ultrasonography was performed using a GE Voluson 730 Pro machine (GE Medical Systems, Waukesha, WI, USA) with a 6-12 MHz endocavity transducer. It showed a hypochoic region with a size of approximately 1.7×1.0 cm with a hyperechoic spot, rich blood supply, and non-spherical and irregular margin in the left tongue base (Fig. 3a, b). It suggested that the mass may be an inflammatory granuloma instead of a tumor. Additionally, ultrasound also showed a linear foreign body-like hyperechoic area (1.2×0.07 cm) at the edge of the mass (Fig. 3c). Interestingly, the patient denied having eaten fish within the last six months. Incisional biopsy was performed un-

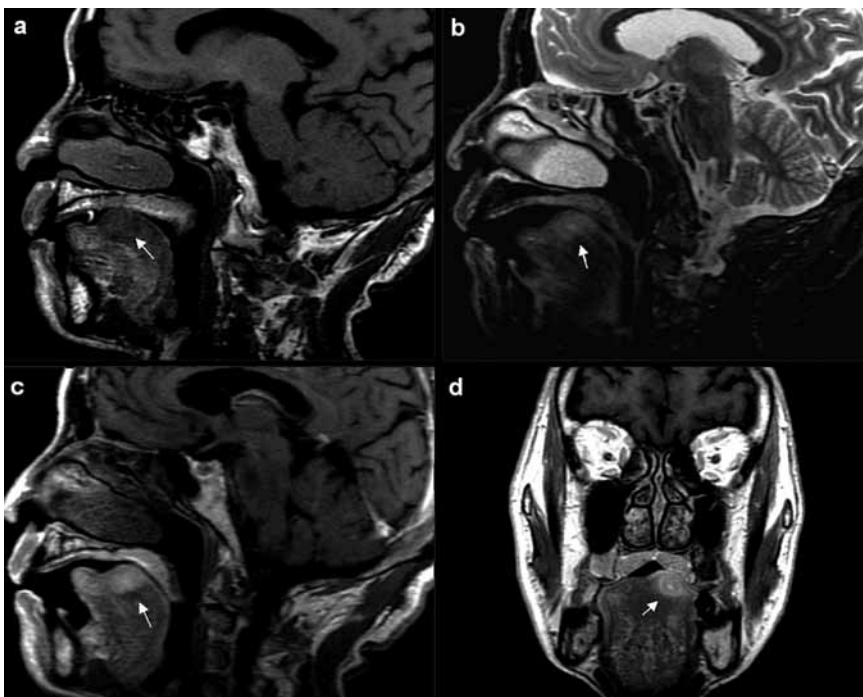


Fig. 2 Magnetic resonance imaging of the tongue mass. An ill-defined mass in the left tongue base was found in the sagittal T1-weighted images **a** and T2-weighted MR image **b**, which was isointensive and hyperintensive compared to normal (arrow). A sagittal gadolinium-enhanced T1-weighted MR image **c** showed an enhancing mass with a diameter of 1.0 cm, and a coronal T1-weighted MR image **d** revealed the heterogeneously enhanced mass with a pattern of target sign (arrow).

Abb. 2 MRT der Zungen Raumforderung. Eine schlecht abgegrenzte Raumforderung in der linken Zungenhälfte konnte auf den sagittalen T1-gewichteten Bildern **a** und den T2-gewichteten Bildern **b** dargestellt werden, die isointens bzw. hyperintens im Vergleich zum normalen Gewebe war (Pfeil). Das sagittale Gadolinium verstärkte T1-gewichtete MRT-Bild **c** zeigte eine kontrastaufnehmende Raumforderung mit einem Durchmesser von 1,0 cm und das koronare T1-gewichtete MRT-Bild **d** zeigte eine heterogen kontrastierte Raumforderung mit einem Schießscheibenmuster (Pfeil).

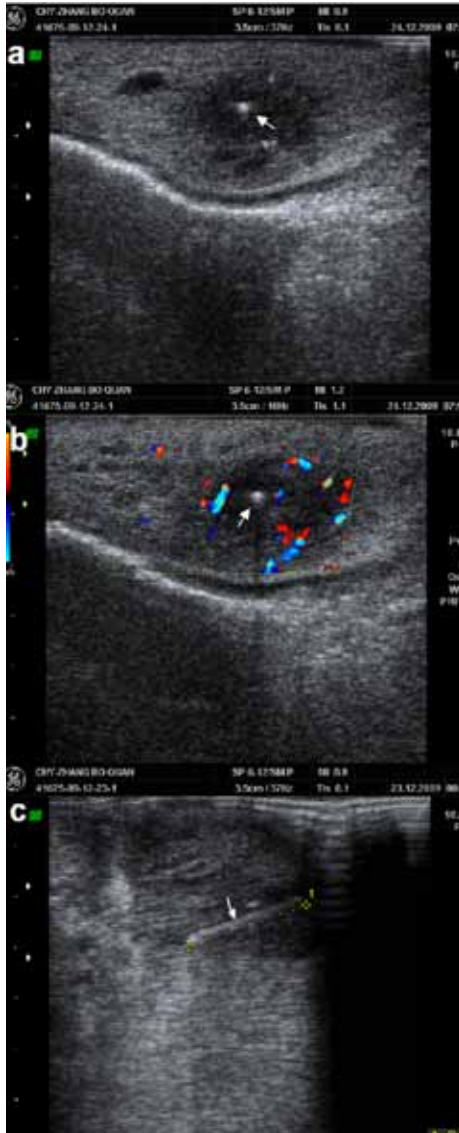


Fig. 3 Ultrasound images of the tongue mass. **a** The tongue mass showed a hypoechoic region (1.7 × 1.0 cm) with a hyperechoic spot. **b** The tongue mass showed a rich blood supply and irregular margin. **c** Ultrasound showed a linear foreign body-like hyperechoic area (1.2 × 0.07 cm) at the edge of the mass.

Abb. 3 Ultraschall Bilder der Zungenraumforderung. **a** Die Raumforderung der Zunge konnte als hypoechoogene Region (1,7 × 1,0 cm) mit einem hyperechoenen Punkt dargestellt werden. **b** Die Raumforderung zeigte eine starke Perfusion und war unregelmäßig berandet. **c** Der Ultraschall zeigte eine lineare hyperechogene fremdkörperartige Läsion (1,2 × 0,7 cm) am Rande der Raumforderung.

der local anesthesia. A 1.2 cm (long) × 0.05 cm (diameter) fishbone was then removed from the site identified by ultrasonography (●Fig. 4). A piece of tissue in the mass was also cut and sent for pathological study. The final pathological report confirmed that the mass was inflammation rather than tumor.

Discussion

There are many differential diagnoses for an enlarged tongue mass, including schwannoma, germ cell tumor, irritative firm mass, lymphoma or inflammation lesion. When accompanied by pain, swelling and a history of oral trauma, the tongue mass was often considered to be a foreign body. More often, the history is non-contributory for tongue foreign bodies, because the initial trauma has either been suppressed or simply forgotten by the patient during the first visit. In this case, no oral traumatic event was reported by the patient. Even the foreign body was showed by ultrasound. The patient denied the traumatic experience of eating fish. In the absence of oral traumatic experience or inflammatory symptoms, the tongue mass is often first diagnosed as a neoplasm (Lin CJ et al. *Eur Arch Otorhinolaryngol* 2003; 260: 277-279). In the case of suspicion of a tongue neoplasm, MRI is a wonderful diagnostic tool. It provides valuable information both within and around the tongue (Chong V. *Cancer Imaging* 2005; 5:

S 49-S52). In the present case, MRI imaging suggested that the tongue mass was a neoplasm, and did not show any trace of foreign body. However, ultrasound imaging suggested that the mass was inflammation and may have been caused by a foreign body due to the hyperechoic point in the mass. Ultrasound scans from multiple angles showed a linear foreign body-like hyperechoic area beside the mass. In the case of suspicion of a foreign body in the soft tissue, the particles are better defined with respect to form and size with ultrasound than with MRI (Oikarinen KS et al. *Int J Oral Maxillofac Surg* 1993; 22: 119-124). It was reported that the swallowed foreign bodies migrated through the wall of the gut and caused corresponding complications. Ultrasound examination played a key role in determining patient treatment (Binek J et al. *Ultraschall in Med* 2007; 28: 129-130; Weiler H et al. *Ultraschall in Med* 2006; 27: 59-62). In this case, 90% of the fishbone had moved away from the mass as a result of daily tongue movement. It may be difficult to remove the fishbone with surgery without ultrasonography. Additionally, intraoral ultrasonography was an excellent method for delineating tumor extent and tumor thickness in tongue carcinomas (Shintani S et al. *Int J Oral Maxillofac Surg* 2001; 30: 139-143). It could measure the tumor thickness within 1 mm. However, in most tumors with a thickness of less than 5.0 mm, CT and MRI could not detect a sufficient density difference between the normal tissue and the tumor. There was a significant correlation between measurements by intraoral ultrasonography and the histological sections. Therefore, intraoral ultrasonography may improve the differential diagnosis of an enlarged tongue mass.

There have been rare reports of an enlarged mass due to a totally



Fig. 4 Photograph of the fishbone (1.2 × 0.05 cm) removed by surgery.

Abb. 4 Fotografie der Fischgräte (1,2×0,5 cm) nach chirurgischer Entfernung.

embedded foreign body manifesting as a neoplasm in the tongue. However, the possibility of a foreign body should be included in the differential diagnosis of a patient with an enlarged tongue mass. Thus, ultrasonography will play an important role in the differential diagnosis.

Statements

- ▶ The possibility of a foreign body should be included in the differential diagnosis of an enlarged tongue mass.
- ▶ Intraoral ultrasonography may improve the differential diagnosis of foreign body granulomas and neoplasms in the tongue.

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