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, 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 diagnosed 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 (\textbf{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). T1-weighted imaging demonstrated a round isointensive mass with an ill-defined margin in the left tongue base (\textbf{Fig. 2a}). The mass signal was heterogeneous and slightly hyperintensive compared to the tongue tissue in T2WI (\textbf{Fig. 2b}). It was heterogeneously enhanced with a relatively well-defined edge after venous injection of contrast media (\textbf{Fig. 2c}). The enhanced coronal T1WI (\textbf{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 hypoechoic 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 (\textbf{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 (\textbf{Fig. 3c}). Interestingly, the patient denied having eaten fish within the last six months. Incisional biopsy was performed un-
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. 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 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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