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**Ultrasound features of primary non-Hodgkin’s lymphoma of the palatine tonsil: A case report**

Jiang R *et al*. Ultrasound features of NHL of the tonsil

Ru Jiang, Hong-Mei Zhang, Lin-Ying Wang, Lin-Ping Pian, Xin-Wu Cui

**Ru Jiang, Hong-Mei Zhang,** The Third Clinical Medical College of Henan University of Chinese Medicine, Henan University of Chinese Medicine, Zhengzhou 450000, Henan Province, China

**Lin-Ying Wang, Lin-Ping Pian,** Department of Ultrasound, The First Affiliated Hospital of Henan University of Chinese Medicine, Zhengzhou 450000, Henan Province, China

**Xin-Wu Cui,** Department of Medical Ultrasound, Tongji Hospital, Tongji Medical College of Huazhong University of Science and Technology, Wuhan 430030, Hubei Province, China

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**Corresponding author: Lin-Ping Pian, MM, Chief Doctor,** Department of Ultrasound, The First Affiliated Hospital of Henan University of Chinese Medicine, No. 19 Renmin Avenue, Jinshui District, Zhengzhou 450000, Henan Province, China. plp932@163.com

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**Abstract**

BACKGROUND

Lymphomas are the second most common malignancy of the head and neck. In this region, the vast majority of extranodal lymphomas are located in the palatine tonsil, accounting for about 51%. Tonsillar lymphomas are aggressive tumors with intermediate- or high-grade histology. We here report a case of primary non-Hodgkin’s lymphoma of the palatine tonsil and analyze its ultrasound features.

CASE SUMMARY

A 40-year-old man presented with right palatine tonsil swelling for 2 mo after a cold, accompanied by dysphagia, snoring, and suffocation. He had no sore throat, fever, or history of upper respiratory tract infection or tuberculosis. The patient was generally in good health and denied other diseases. He was diagnosed with acute tonsillitis initially and treated with antibiotics for 7 d. However, there was no improvement with the treatment. Tonsil biopsy and ultrasound-guided biopsy of the biggest lymph node of the right neck showed the typical pathology of non-Hodgkin lymphoma.

CONCLUSION

Primary lymphoma of the tonsils is rare, and its diagnosis is challenging. Ultrasound is a useful modality in diagnosing oropharyngeal diseases, and can clearly show the features of this tumor, but the final diagnosis should be established by histology.

**Key Words:** Ultrasound; Primary non-Hodgkin’s lymphoma; Palatine tonsil; Case report

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**Core Tip:** Primary lymphoma involving the tonsils is a rare malignancy. We report a 40-year-old man presenting with right palatine tonsil swelling for 2 mo confirmed as a tonsillar lymphoma. Ultrasound can clearly show the features of primary non-Hodgkin’s lymphoma of the tonsils and could be a useful imaging modality in diagnosing oropharyngeal diseases.

**INTRODUCTION**

Lymphomas of the head and neck arise from lymph nodes as well as extranodal sites. Waldeyer’s ring is the most common anatomical site for extraneous lymphoma in this region (35%-65% of all head and neck lymphomas). Within the Waldeyer’s ring, more than 50% of lymphomas arise in the palatine tonsil[1,2]. Patients with tonsillar lymphomas may present with unilateral tonsil enlargement, sore throat, dysphagia, and/or lump in the throat and/or neck[3]. A few patients have fever, emaciation, night sweat, or other systemic symptoms. Diagnosis is challenging because of the unremarkable clinical presentation. Ultrasound is a commonly used modality in the detection of superficial organs, and has advantages including real time and absence of ionizing radiation. We here report a case of primary lymphoma of the palatine tonsil and analyze the ultrasound features for diagnosis.

**CASE PRESENTATION**

***Chief complaints***

A 40-year-old man presented with right palatine tonsil swelling for 2 mo.

***History of present illness***

The patient presented with right palatine tonsil swelling for 2 mo after a cold, accompanied by dysphagia, sleep snoring, and suffocation. He had no sore throat, fever, or history of upper respiratory tract infection or tuberculosis. He was diagnosed with acute tonsillitis initially and treated with antibiotics for 7 d. However, there was no improvement with the treatment.

***History of past illness***

The patient was generally in good health and denied other diseases.

***Personal and family history***

The patient did not have any addictions or any significant family history.

***Physical examination***

Physical examination revealed right-sided tonsillar enlargement (grade III) with surface ulceration, but without pharyngeal portion hyperemia. Several mobile, nontender lymph nodes were palpable in the right swelling submandibular area, with the largest measuring about 5 cm × 7 cm.

***Laboratory examinations***

Results of biochemical, serologic, and pathologic examinations were all within normal limits. Bone marrow test showed normal erytheroid/myeloid ratio and percentages of myeloid and lymphoid cells.

***Imaging examinations***

Ultrasound (7-12 MHz linear array transducer, ARIETTA 70, Hitachi Healthcare, Japan) of the right neck and submandibular area demonstrated that the volume of the right tonsil increased significantly. It appeared as a hypoechoic round mass with well-defined margins, homogeneous echo, and rich blood flow signals (Figure 1). In the level IA area of the right neck, multiple enlarged lymph nodes were seen with a clearly defined boundary and hypoechoic internal echoes. They partly integrated without visible echogenic hilar structures and remarkable blood flows could be observed on color Doppler imaging.

**FINAL DIAGNOSIS**

Non-germinal center type diffuse large B cell lymphoma (DLBCL) (Figure 2).

**TREATMENT**

The patient underwent chemotherapy followed by radiotherapy. The chemotherapy regimen included six courses of cyclophosphamide, doxorubicin, vincristine, and prednisone.

**OUTCOME AND FOLLOW-UP**

At the 6-mo follow-up, there were no signs of any recurrence of the tumor. No further follow-up was available to be reported.

**DISCUSSION**

Primary lymphomas are aggressive tumors of lymphoid tissues that are comprised of lymphocytic or reticulocytic derivatives of varying degrees of differentiation[4]. Lymphomas are the second most common malignancy of the head and neck after squamous cell carcinoma[5]. Approximately 2.5% of malignant lymphomas arise in the oral and paraoral region, mainly from Waldeyer’s ring, including the nasopharynx, palatine tonsils, adenoids, lingual tonsils, and the base of the tongue[6,7]. Within the Waldeyer’s ring, more than 50% of lymphomas arise in the palatine tonsil[8,9]. Most lymphomas involving the tonsil are non-Hodgkin’s lymphomas (NHLs), and the most prevalent lymphoma subtype is DLBCL[10,11], which comprises approximately 30% of all NHLs[12]. Tonsillar lymphomas are aggressive tumors of intermediate or high grade, mainly occurring in men with a male/female ratio of 1.3:1.1[1]. However, the disease can affect patients with a wide age range including children[13,14]. The tumors may present in early stage and have a favorable outcome despite a high incidence of aggressive histology. Common symptoms include mass in the throat, dysphagia, odynophagia, and sore throat, some of which are similar to those of tonsillitis. Only 25% of patients have systemic symptoms in head and neck lymphomas[2]. Due to the similar clinical presentations, differentiation of primary tonsil lymphoma from tonsillitis or peritonsillitis is difficult. The disease is easily misdiagnosed if patients have no lymphadenopathy symptoms[15]. As in the present case, the patient was misdiagnosed with tonsillitis and received unnecessary treatment of antibiotics. The misdiagnosis resulted in increased mental anguish as well as medical burdens to the patient. Unilateral tonsillar enlargement with regional swollen lymph nodes should raise suspicion for malignancy of the tonsils. Clinicians should be aware of such infrequent primary lymphoma in the tonsils so as to avoid the misdiagnosis. As for the treatment, combined chemotherapy and involved-field radiation therapy is currently the preferred treatment for the majority of patients with localized primary tonsillar lymphoma.

Currently, ultrasound is not routinely used for the diagnosis of oropharyngeal diseases. Coquia *et al*[16] obtained clear images of tonsils on B mode and color Doppler ultrasound. Normal tonsils are presented on ultrasound as homogeneously ovoid echogenic soft tissue with stripes and internal linear echogenicity. Posterior to the palatine tonsil is the pharyngeal constrictor, which is hypoechoic on the ultrasound. Color Doppler ultrasound can show the multiple vessels of the external carotid artery supplying the palatine tonsil.

According to our observations, the characteristics of primary tonsil lymphomas are as follows: Spherical tonsils with significantly increased volume; hypoechoic structures with the loss of normal striated pattern; and vascular proliferation and the internal irregular color signal (Figure 3).

Contrast-enhanced computed tomography (CT) and positron emission tomography/CT are frequently used to confirm the diagnosis of oropharyngeal tumors. However, they are limited by the high cost, radiation dose, motion, and dental amalgam artifact. Currently, tissue-based histopathological examination remains the only reliable diagnostic method, but it is invasive. Ultrasound could be used for diagnosing oropharyngeal diseases as it is portable, readily available, nonionizing, and with better resolution. The present case suggests that ultrasound is useful for the differential diagnosis of oropharyngeal inflammation and tumor. However, more case studies are needed to establish the best effective diagnostic strategy for lymphoma of the tonsils.

**CONCLUSION**

Primary lymphoma involving the tonsils is a rare malignancy and it is difficult for clinicians to make a correct diagnosis timely based on the physical examination alone. Currently, multiple imaging modalities have been used in the differential diagnosis of oropharyngeal diseases. Ultrasound can clearly show the features of primary lymphoma of the tonsils and could be a useful imaging modality in diagnosing oropharyngeal diseases. However, a definitive diagnosis can be established only by histopathology.

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**Footnotes**

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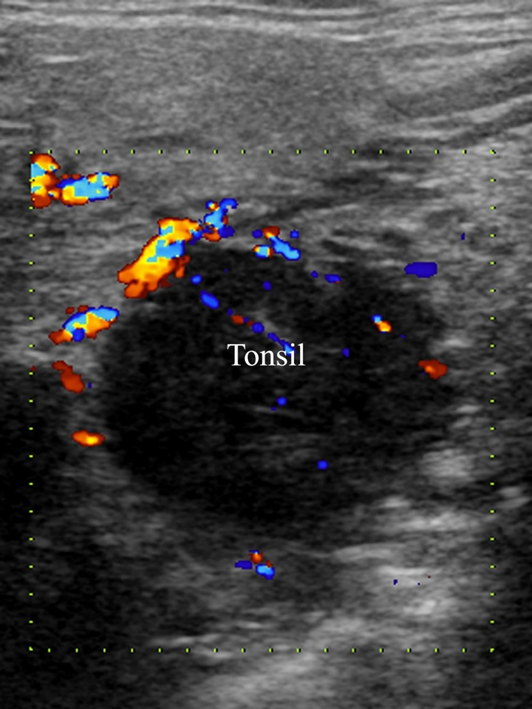
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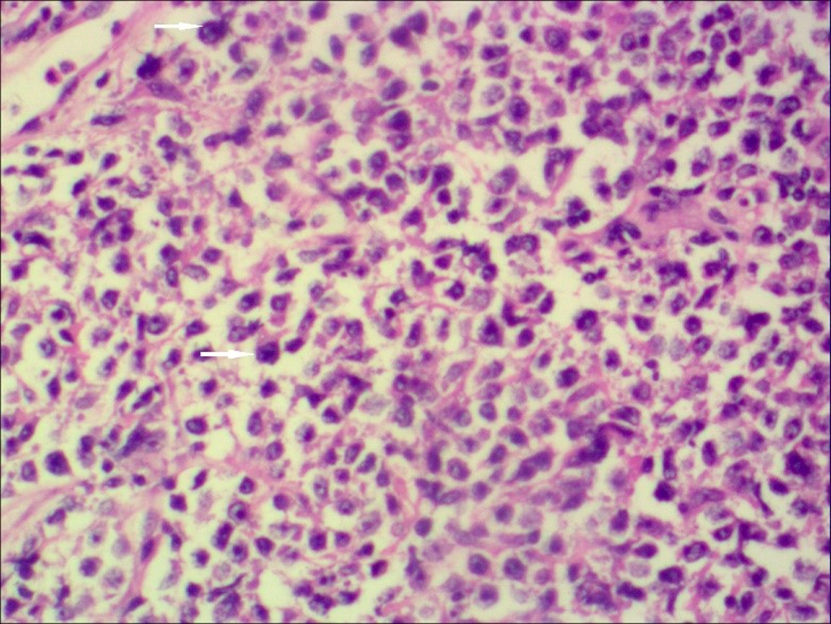
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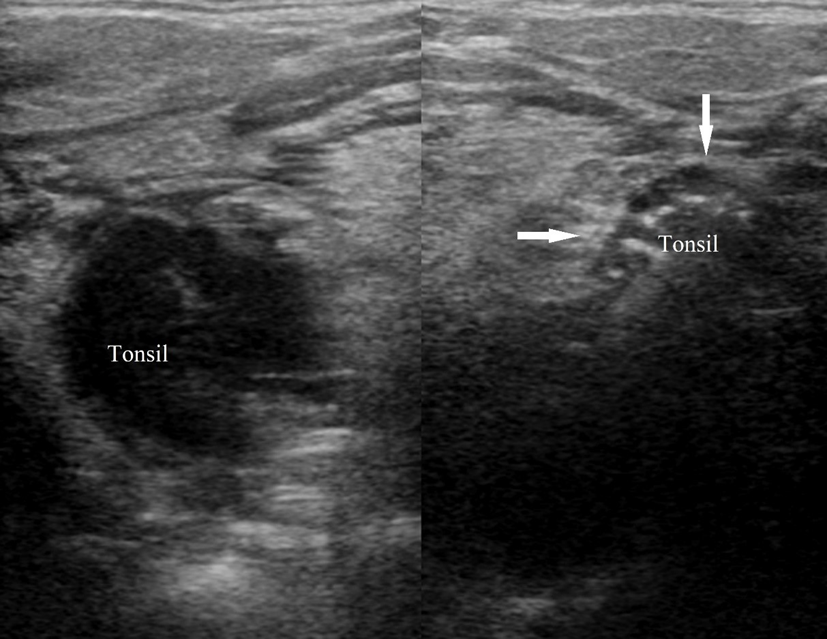
**Figure Legends**



**Figure 1 Ultrasound showed a hypoechoic round mass in the right tonsil with well-defined margins, homogeneous echogenicity, and rich irregular blood flow.**



**Figure 2 Photomicrograph of a diffuse large B cell lymphoma demonstrating that regional tumor cells (orange arrows) are mononuclear or multinucleated, resembling histiocytes and Reed-Sternberg cells (400 ×, hematoxylin-eosin staining).**



**Figure 3 Comparison of bilateral tonsils.** The normal tonsil (indicated by the arrows) presents as homogeneously ovoid echogenic soft tissue with stripes and linear echo inside, while the right tonsil as a hypoechoic round mass with the loss of normal striated pattern.



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