

**HEMANGIOMA OF TONGUE WITH ULTRASOUND, DOPPLER, CT AND MRI
DIAGNOSIS: A CASE REPORT**

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ABSTRACT

Hemangiomas are benign tumors which are commonly seen in head and neck region. They are not present at birth rather seen one or two months after birth. They grow by rapid proliferation and then show a regressive phase slowly to involute to non-existent. Their treatment is based upon location, size of lesion along with patient's age. Oral hemangiomas are commonly seen on lips, tongue and palate with rarely on buccal mucosa. Oral hemangiomas are of utmost clinical importance and require prompt diagnosis and appropriate treatment. In untreated cases they can cause oral functional impairment like, speech, breathing, mastication and swallowing. Presently we are reporting a case of hemangioma of tongue diagnosed with ultrasound, doppler, computed tomography (CT) and Magnetic Resonance Imaging (MRI), reviewed treatment modalities and clinical implication.

KEYWORDS: Hemangioma, Vascular malformation, Tongue, Ultrasound, Doppler, CT, MRI.

INTRODUCTION

Hemangiomas are benign tumors of infancy and childhood, most commonly seen in the head and neck region and occur more frequently in the lips, tongue and palate. They are benign vascular lesions which are an outcome of blood vessel abnormalities and endothelial cell proliferation. It was derived from Greek word (Haima-blood; angeion vessel, oma-tumor). Hemangiomas show marked hyperplasia of blood vessels, usually veins and capillaries, in a localized area of submucosal connective tissue which is never capsulated. They grow by rapid proliferation and then show a regressive phase slowly to involute to non-existent. They are best classified by Mulliken and Glovacki (1982) in two categories. (hemangiomas and the vascular malformations). Hemangiomas are further grouped as arterial and arteriovenous (high flow) type, capillary or venous (low flow) type.^[1,2,3]

The treatment depends upon the location, size and evolution stage of the lesion and the patient's age. Sclerotherapy for small lesions and surgery for large lesions is the mainstay of treatment.^[4,5]

On clinical examination hemangiomas are seen as red or bluish-purple swellings filled with blood which disappear momentarily on digital compression or pressure (best method to diagnose them clinically called

as Diascopy test). They vary in size ranging from a few millimeters to several centimeters. Physically they appear as a flat or elevated lesion which may be in the form of a macule, papule, nodule or tumor, is normally pulsatile and has a higher temperature than adjacent tissues. Because of the connective tissue interposed within the vascular spaces, hemangiomas are fibrous in consistency. The clinical examination should be done with extreme care and precautions because in cases of extensive involvement minor trauma may cause profuse bleeding which becomes difficult to control. They present as single or multiple lobules causing facial asymmetry. Oral hemangiomas are of utmost clinical importance and require prompt diagnosis and appropriate treatment as the untreated cases can cause oral functional impairment like, speech, breathing, mastication and swallowing.^[5,6,7]

Thus the correct diagnosis of hemangiomas is like half treatment done which is done by diascopy test clinically and, ultrasound, CT and MRI radiographically. Thus this case report presents hemangiomas of tongue diagnosed with ultrasound, CT and MRI imaging.

CASE REPORT

A 25 year old male presented with a swelling at the posterior part of tongue since 20 years, increasing in size since 2 years. There were no associated features of pain,

fever, difficulty in the speech and swallowing. Past medical, dental and family histories were non-contributory and on physical examination, he appeared to be healthy and, with all his vital signs being within normal limit. On Intra-oral examination [Figure 1], revealed a solitary oval swelling in the right posterior 1/3rd of tongue extending dorsally, measuring about 5 x 4 cm in size. The surface appeared to be smooth and granular with well-defined borders. The swelling was bluish purple in color with normal surrounding area. On palpation it was soft to firm in consistency, non-mobile, non-tender; afebrile with no palpable thrills. It disappears momentarily on digital compression (Diascopy Test). The routine blood and urine investigations were normal. On ultrasound, a well-defined solid echogenic lesion in posterior aspect of tongue, with central areas of hypoechogenicity, with few small specs of echogenic calcification within the lesion. On Doppler, the lesion does not show significant arterial flow. However, on compression, augmentation of venous flow is noted. On CT scan, the lesion appears as a well circumscribed, heterogenous soft tissue density mass with 2-3 small foci of calcification within it. The soft palate is uninvolved however mild mass effect and posterior displacement compromising oropharyngeal air way. MRI revealed, a well-defined round to oval slightly lobulated heterogenous lesion in posterior part of tongue involving intrinsic muscles and superior portion of floor of mouth with intense peripheral enhancement, delayed filling,

calcifications within as described above, mostly suggestive of slow flow venous malformation (giant cavernous hemangioma). Histopathological examination confirmed the definite diagnosis of cavernous hemangioma.

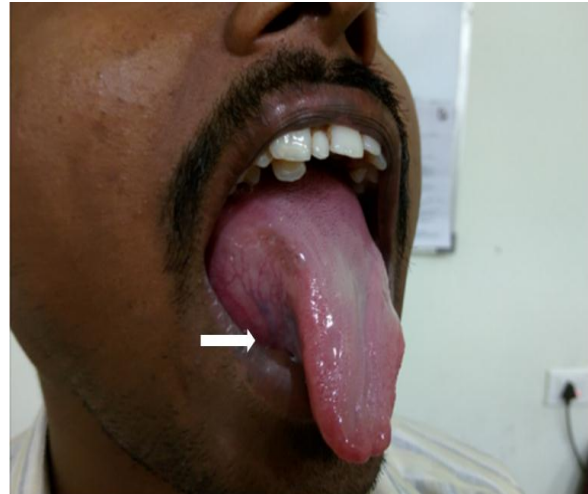


Figure: 1. A 25-year-old man with lobulated mass in posterior 1/3rd of tongue diagnosed as hemangioma. Photographic image shows a well-defined, bluish-purple lobulated mass (white arrow) with well-defined margins and smooth surface.

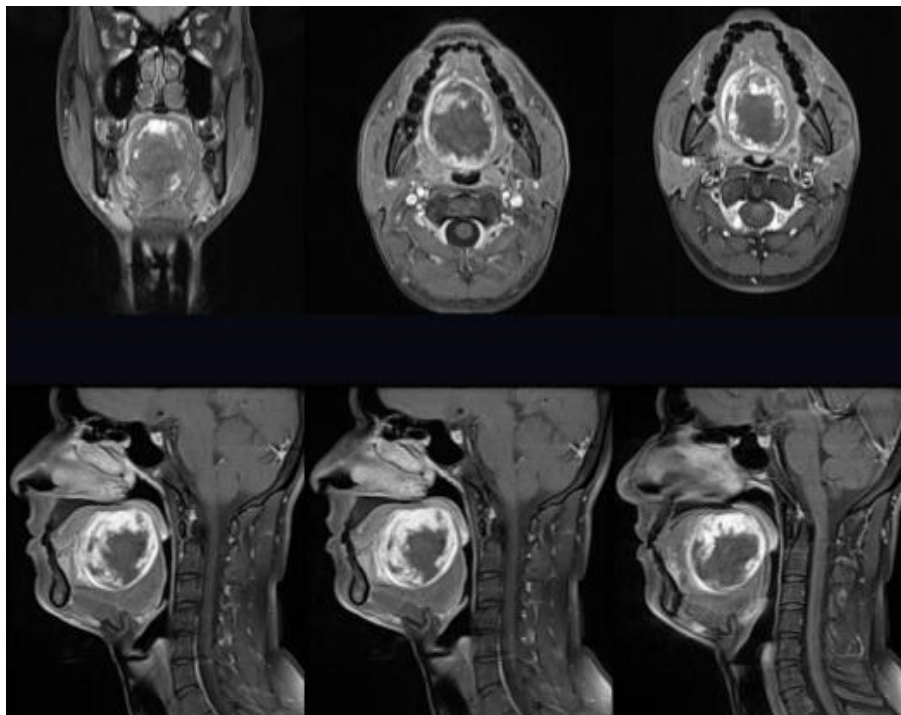


Figure: 2. MRI revealed, a well-defined round to oval slightly lobulated heterogenous lesion in posterior part of tongue involving intrinsic muscles and superior portion of floor of mouth with intense peripheral enhancement, delayed filling, calcifications within as described above, mostly suggestive of slow flow venous malformation.

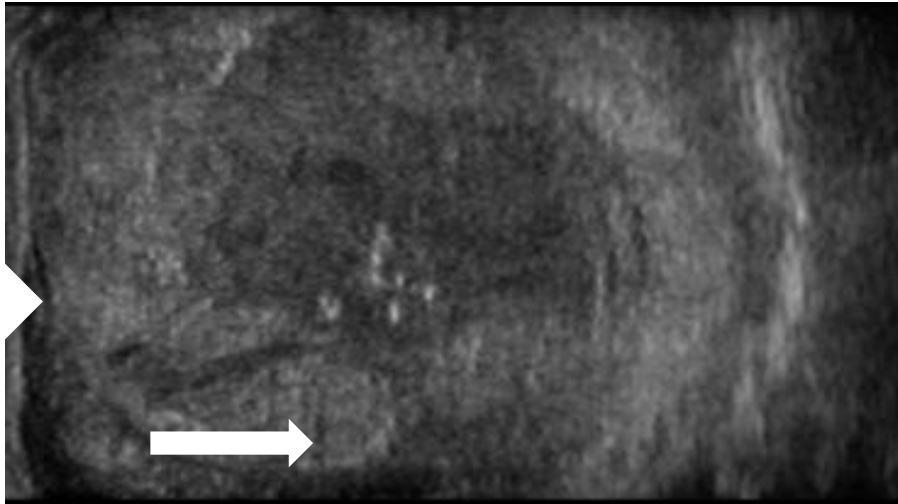


Figure: 3. On ultrasound, a well-defined solid echogenic lesion in posterior aspect of tongue (broad arrow), with central areas of hypoechogenicity, with few small specs of echogenic calcification (thin arrow) within the lesion.

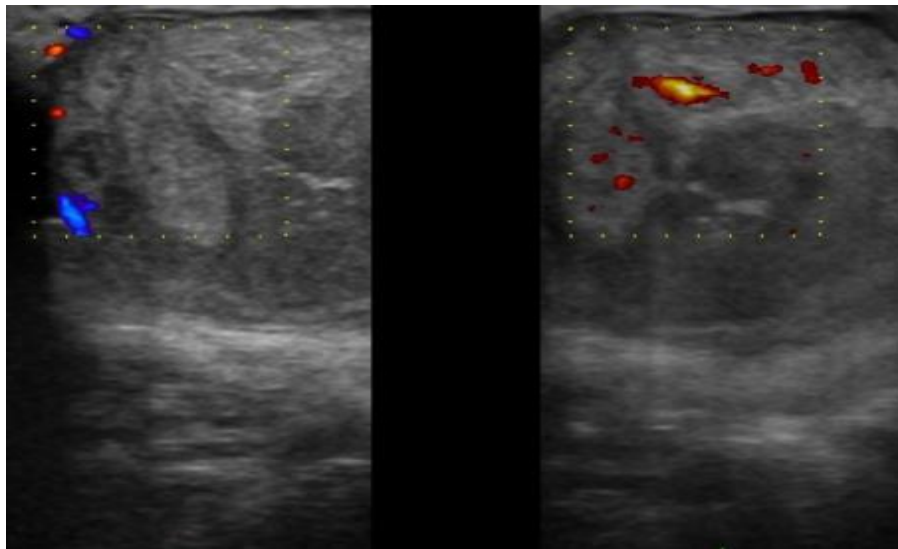


Figure: 4 On Doppler, the lesion does not show significant arterial flow. However, on compression, augmentation of venous flow is noted

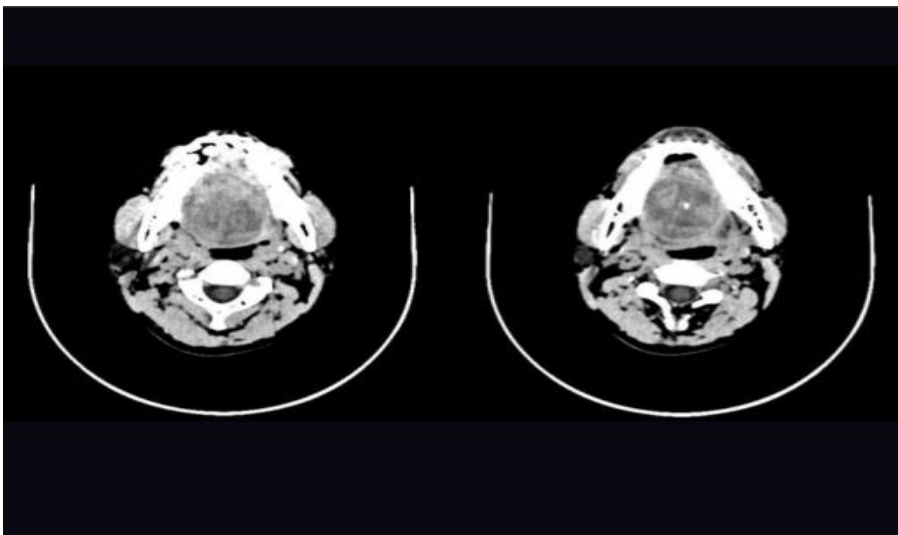


Figure: 5. On CT scan, the lesion appears as a well circumscribed, heterogenous soft tissue density mass with 2-3 small foci of calcification within it. The soft palate is uninvolved however mild mass effect and posterior displacement compromising oropharyngeal air way.

DISCUSSION

The oral cavity, head and neck regions possess complex, rich and intricate blood vessels which are thought to be a predisposing factor for a variety of vascular lesions. Vascular lesions may or may not be present at birth but surely become clinically appreciable in late infancy or childhood and their size and growth is affected by infection, trauma and endocrinal changes. Normal endothelial cycle and a normal number of mast cells is one of the characteristic features of vascular malformations. The common vascular lesion affecting head and neck region is hemangiomas which are usually seen 2-4 weeks after birth, then grow rapidly till the age of 6-8 months and further at slow rate. Later regressions are appreciated by or after age of 5-8 years and they completely regress in 70% of the cases. The hemangiomas are found approximately in 2-3% neonates, 10-12% in children less than 1 year of age and 22 to 30% found amongst babies whose weight is less than 1000g at the time of birth. They also show a female predilection (ratio 3:1). In contrast to this, the present case was observed in a male ageing 25 year. Around 70-80 % of hemangiomas occur as a single lesion, while multiple lesions are found in 20% of affected patients with rare tongue involvement. The present case also had a single lesion on tongue.^[1,4,8]

Till date no clear pathogenesis is sufficient and currently two theories are being proposed. One theory stated that disrupted placental tissue gets embedded in the fetal soft tissues during the time of gestation or birth and give rise to hemangiomas. On the other hand according to the other theory, hemangiomas rise from endothelial progenitors and stem cells. Angiogenesis is stimulated by cytokines, such as basic fibroblast growth factor (bFGF) and vascular endothelial growth factor (VEGF). Excesses of these angiogenic factors or decreases of angiogenesis inhibitors (e.g., gamma-interferon, tumor necrosis factor-beta, transforming growth factor-beta) have been implicated in the development of hemangiomas.^[1,9]

Hemangiomas as benign tumors are found commonly on head and neck region with rare oral involvement. Oral and peri-oral hemangiomas are common on lips, tongue and palate and rarely occur on buccal mucosa and palate. In the discussed case the lesion was present on posterior part of tongue. The presentation of this tumor at this site causes a lot of aesthetic problems, susceptibility to trauma, cause speaking or swallowing problems. Observation followed by prompt diagnosis is the main treatment for cases at this site. Clinical diagnosis is made by clinical features and diascopy. Imaging modality commonly involved is ultrasound. But the present case was diagnosed with advanced imaging methods like color doppler, ultrasonography, CT and MRI.^[1,2]

Histologically early lesions of cavernous hemangiomas show high cellularity with solid nests of plump endothelial cells with little vascular lesion and in

established lesions well-developed, flattened, and endothelium-lined capillary channels of varying sizes in a lobular configuration are seen. On the other hand large dilated blood sinuses with thin walls each showing an endothelial lining are seen along with sinusoidal spaces filled with blood.^[10,11]

A differential diagnosis of mucocele, ranula, cysts, varicosities and arteriovenous shunts, granuloma fasciale, insect bite, pyogenic granuloma, and angiosarcoma can be given for this condition. Many syndromes also show hemangiomas as one of their clinical diagnostic feature and the common among them are Rendu-Osler-Weber syndrome, Sturge-Weber-Dimitri syndrome, Kasabach-Merritt syndrome, Maffucci syndrome, Von Hippel-Lindau syndrome, KlippelTrenaunay-Weber syndrome and blue rubber bleb nevus syndrome. But the present case did not have any syndromic feature.^[1,2]

Factors which govern the treatment of hemangiomas are their location, size and nature whether venous or arterial. Therefore, correct diagnosis is must for proper treatment and favorable prognosis. On diascopy test, the lesion blanched under glass in response to pressure and reduced in size, as the blood vessels emptied, differentiating it from other lesions, such as cysts and mucocele, this would not have blanched. As diascopy test is simple and useful in diagnosis of hemangioma but it is not easy to perform this test on certain sites like gingiva and palate where supplementary imaging test are required. In the case described here, the clinical characteristics suggested a diagnosis of hemangioma and were supplemented by the advanced imaging included Ultrasound with Doppler (to determine the nature of the blood supply to the lesion whether arterial or venous), CT and MRI.^[4,6,7]

Sclerotherapy is the best and most commonly followed method for smaller and peripheral lesions along with other treatment options including conventional surgical excision, laser treatment, radiotherapy, electrocoagulation and cryotherapy. And for larger and bony hemangiomas treatment options are embolization or obliteration of the lesion and adjacent vessels for ease in supplementing for a subsequent surgical procedure.^[12,13,14]

CONCLUSION

Intraoral hemangioma is a rare occurrence on tongue. Despite different recommended modalities in managing hemangiomas of the tongue, early detection and correct diagnosis are crucial. Thus advanced imaging modalities like ultrasound with Doppler, CT and MRI are of immense importance.

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