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Sonographic Imaging of Vascular Lesions-Report of 3 Cases

Dr. M. Shanthi[1], Dr. S. Sathasivasubramanian[2], Dr. K. Anbarasi[3]

[1]Department of oral medicine and radiology, SRM Dental College, SRM University, Potheri, Tamil Nadu, India

[2]Department of Oral Medicine and Radiology, Sri Ramachandra University, Chennai Tamil Nadu, India

[3]Department of Oral Medicine and Radiology, Sri Ramachandra University, Chennai ,Tamil Nadu, India

Abstract: ***Sonography was introduced in the Medical field in early 1950's.. Ultrasonography is one method of imaging which lacks radiation hazards, this imaging technique can be used in Vascular lesions. The use of ultrasound in diagnosis is well established because of its noninvasive nature, low cost, capability of forming real time imaging and continuing improvement in image quality.We present a case reports of 3 patients who presented with an asymptomatic nonspecific swelling and with the help of ultrasound imaging, these cases were diagnosed as hemangioma.***

1. Introduction

A hemangioma is a proliferation of blood vessels that creates a mass resembling a neoplasm. It is generally noted within the first 2 weeks of postnatal life and occurs most commonly in the craniofacial region (60%), followed by the trunk (25%) and extremities (15%) .Hemangiomas are endothelial tumors with a unique biologic behaviour .they grow rapidly, regress slowly, and never recur. The three stages in the life cycle of a hemangioma, each characterized by a unique assemblage of biologic markers and processes

1) Proliferating phase (0–1 year of age),
2) Involuting phase (1–5 years of age),
3) Involuted phase (>5 years of age).

These stages are typically clinically apparent and can be distinguished microscopically and immunohistochemically [8].In 1982, Mulliken and Glowacki [4] classified hemangiomas based on the cellular biology and natural history of these lesions, dividing vascular birthmarks into two groups: hemangiomas and vascular malformations. A modification of this classification system was accepted by the International Society for the Study of Vascular Anomalies in 1996.

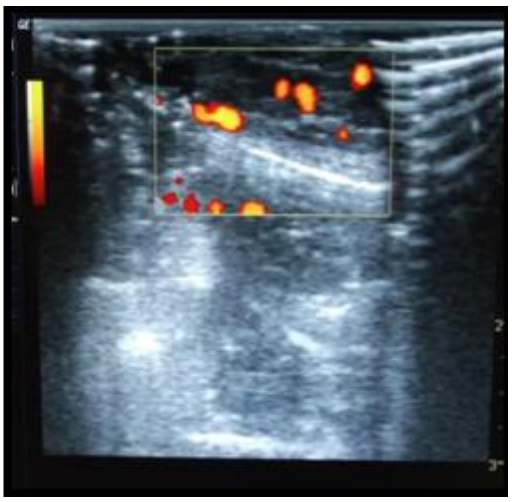
Hemangiomas may be cutaneous, involving skin, lips, and deeper structures;mucosal, involving the lining of the oral cavity; intramuscular involving masticatory and perioral muscles; or intra‐osseous involving mandible and/or maxilla. Clinically hemangiomas are soft, sessile or pedunculated, and painless. Hemangiomas can be associated with a number of abnormalities. One cluster of abnormalities has been referred to as the PHACE syndrome: posterior fossa abnormalities, facial hemangiomas, arterial abnormalities, cardiovascular defects, and eye abnormalities.

Case 1

A 27 year old male complaints of swelling in the mouth for past 5 years. History revealed patient was apparently normal 5 yrs back after which he developed a small swelling in the mouth which gradually increased to the present size. No associated symptoms evident. Family history was not contributory. Patient was moderately built and nourished and vital signs were normal

On intraoral examination, A single irregular swelling was evident in relation to the right buccal mucosa roughly measuring about 3*4 cm in dimension. Anteriorly extending from right commissure of lip, posteriorly 3 cm short of right retromolar region. Superiorly extending 2cm short of upper buccal sulcus, inferiorly extending 0.5 cm short of lower mucobuccal sulcus. Colour-bluish and surface appears nodular .On palpation, all the inspectory findings of size, site, shape and margins are confirmed. Non tender , non

fluctuant, soft in consistency, compressible and partially reducible.
Chairside diascopy test was positive, which revealed blanching on pressure



Right Buccal Mucosa- A well defined 2.7*1.3 cm measuring lesion ,predominately hypoechoic with multiple tortoures anechoic channels visualised within the lesion .slow venous flow observed within these channels.

Impression- Slow flow vascular malformation in the right buccal mucosa .Suggestive of hemangioma

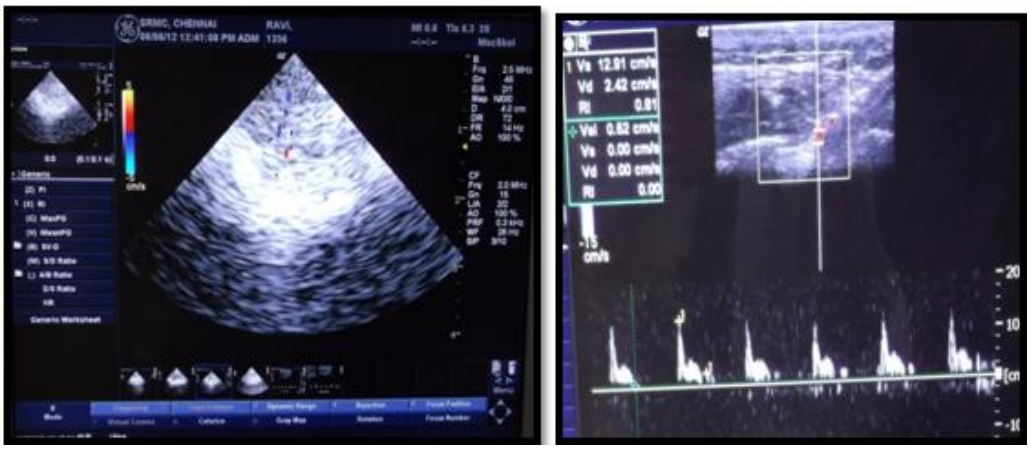
Final Diagnosis: Hemangioma in relation to right buccal mucosa

Provisional Diagnosis
Hemangioma in relation to right buccal mucosa.

Case 2
A 42 year old male complaints swelling in the roof of the mouth for past 1 month. Patient was apparently normal 1 month back after which he developed swelling in the roof of the mouth .Initially the swelling was small in the size and gradually increased to the present size.. No h/o of discharge from the swelling. No h/o of difficulity in swallowing and chewing the food. No h/o pus discharge. No associated symptoms like pain and fever. Family history was not contributory. Patient was moderately built and nourished and vital signs were normal

Inspection
A single, well defined circumscribed growth is evident in the anterior palatal mucosa roughly measuring about 4*5 cm irregular in shape. Surface over the swelling appears erthymatous and pink. Anteriorly 5mm short of the palatal gingival margin of 11,21, Posteriorly 4 cm short of junction of hard and soft palate, Right laterally extending 0.5 mm short of gingival margin of 14 and left laterally extending approx 7mm short of gingival of 24 and 25.mucosa over the growth appears irregular. No visible pulsation evident. On palpation, all inspectory findings size, shape, site, margin and extent are confirmed. Swelling is non-tender, Firm in consistency, surface appears irregular. No pulsation evident

Provisional Diagnosis:
Hemangioma in relation the palatal region



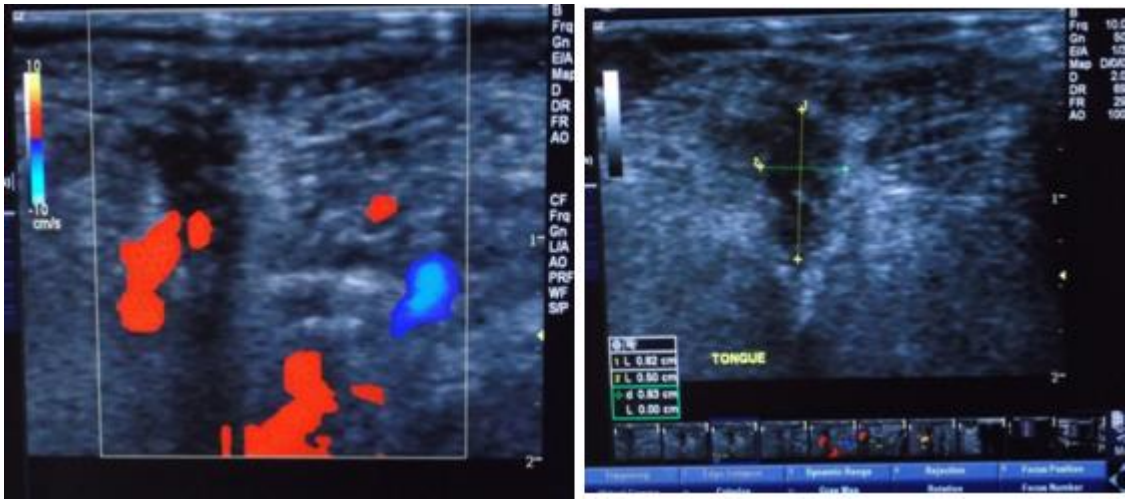
Palatal Mucosa-Evidence of well defined hypoechoic lesion area roughly measuring about 1.6*1.4 cm in right hard palatal region. Flow is noted within the lesion suggesting of vascular lesion

Final Diagnosis
Hemangioma in relation the palatal region

CASE3
A 46 year old male patient was referred to the Department of Oral Medicine and Radiology, for dental evaluation. Patients complaints of swelling in relation to dorsal surface of the tongue for past 3 months. Initially the swelling was small in size and later attained to present size. Family history was not contributory. Patient was moderately built and nourished and vital signs were normal

On intraoral examination single well defined swelling evident irt right dorsal surface of the tongue. Roughly measuring about 1.5 x 1.5 cm in dimension. Surface appears purple in color and smooth. On palpation it is tender, soft in consistency, compressible completely reducible on pressure and gain normal size when the pressure is released. Chairside diascopy test was positive, which revealed blanching on pressure

Provisional Diagnosis
Hemangioma on the dorsal surface of the tongue



Tongue Dorsal Aspect (Central) - 1.2 x 1.1cms, Feeding artery velocity – hypertrophied .increased vascularity is noted

Final Diagnosis
Hemangioma in relation to the central dorsal aspect of tongue

2. Discussion

US and Doppler imaging is advocated for the diagnosis of head and neck vascular lesions because of its availability, noninvasiveness, and relatively low cost .Use of this imaging modality may give information regarding the feeder vessels and aid in pre treatment evaluation. While color Doppler US confirmed the moderate vascularity of the lesion, spectral Doppler US showed low resistance and low velocity flow within the mass. Low flow lesions are mainly suggestive of hemangiomas, venous malformations, or lymphatic malformations, whereas higher flow lesions are usually arteriovenousmalformations. Color Doppler US was also used to locate the feeder vessels, unfortunately without success in this case, but its role should be evaluated in future studies. **Hannes Gruber et al** [7,8] stated that Using brightness mode (b-mode) the exact extension of a lesion can be documented in two perpendicular planes. Also the echotexture i.e. Characterisation of the morphological features of a lesion as hypo-, iso-, hyperechogeneities, the Homogeneity or nodularity and focal spots, such as calcifications or fluid collections .In all the three cases In b-mode hemangiomas present with sharp but irregular outer borders, Especially with hypo- and hyperechogeneous foci and form small most often peripheral but also central blood filled lakes.

Altug HA et al stated that in Color Doppler ultrasound more than 90% of the hemangiomas show a high vascularity which can be assessed and compared to other lesions semiquantitatively based on counting the respective color-coded blood-flow signals per cm on representative CDUS images. **Dubois J et al in a study** stated that the combination of all semi-quantitative and quantitative vascular data lead to a specifity of 98% and positive predictive value (PPV) of 97% for hemangioma.[9]**Yoshida et al**, in 1995, also illustrated the value of color Doppler imaging in the differential Diagnosis and treatment of 2 cases of vascular malformation specifically influenced by the blood flow characteristics shown by color Doppler[11]

3. Conclusion

Hemangiomas are the benign lesions are identified according to clinical criteria. They are common in the head and neck region, but relatively uncommon in the oral cavity proper A good knowledge of the classification and clinical characteristics is necessary when managing these patient. Doppler US is the imaging modalities that allow classification and are useful in those clinically uncertain cases to establish the correct diagnosis. This aids the choice of the most appropriate treatment and to inform the parents of the prognosis. High-resolution grey-scale and Doppler US allow excellent visualization of most superficial masses. Doppler US is the easiest way to assess the haemodynamics of a vascular lesion . A team approach between the imaging specialists (radiologist, angiographer, sonologist) and clinician is necessary for best diagnosis and treatment.

4. Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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