Prevalence and Pattern of Lobular Capillary Hemangioma in Eastern Madhya Pradesh, India: A Clinicopathological Analysis

Abstract

Background: Lobular capillary hemangioma is a common benign vascular tumor seen in the oral cavity. It occurs in response to various stimuli such as low-grade local irritation, traumatic insult, and hormonal factors or as a response to a wide variety of drugs. Materials and Methods: All patients presenting to the Department of Dentistry, Shyam Shah Medical College, Rewa, Madhya Pradesh during July 2014 to June 2016, who were diagnosed by histopathologic confirmation as oral lobular capillary hemangioma (OLCH), were evaluated for the area involved, clinicopathologic presentation, demographic features, and treatment. Results: A total of 94 cases were identified as OLCH by histopathologic confirmation during this period. The lesion occurred most commonly in the age group of 21–30 years. A characteristic female predominance (female: male ratio of 2.24:1) was seen. Anterior maxillary labial gingiva was most frequently involved (34.04%) followed by posterior maxillary buccal gingiva (14.89%). Conclusion: The clinicopathologic picture of OLCH found in this study was similar to other studies conducted on same as well different ethnic and geographical populations. Poor oral-dental-hygiene was observed in majority of patients (87.23%) dental health education should be an integral component of imparting oral health care by health providers. Surgical excision as a treatment modality renders good results with low recurrence rate. Keywords: Excision, lobular capillary hemangioma, pregnancy tumor, pyogenic granuloma

Introduction

There are two histological types of pyogenic granuloma (PG) of the oral cavity: the lobular capillary hemangioma (LCH) and non-LCH type. LCH is a benign tumor of skin and mucous membranes formed by proliferating capillaries. It is an exaggerated, exuberant connective tissue proliferation that occurs in response to a known stimulus or injury like calculus or foreign material within the gingival crevice. The term “PG” introduced by Hartzell in 1904 is a misnomer with no pyogenic material or pus found in the lesion. It is also referred by variety of other names such as granuloma pediculatum benignum, epulis teleangiectaticum granulomatosum, pregnancy tumor, vascular epulis, Crocker and Hartzell’s disease. Gingiva is the most frequently involved intraoral site and its occurrence on lips, tongue, buccal mucosa; palate has also been reported.

Materials and Methods

The study was conducted to evaluate the clinicopathologic and demographic features of 94 cases of histopathologically proven oral lobular capillary hemangioma (OLCH) in patients who reported to the Department of Dentistry, Shyam Shah Medical College, Rewa, Madhya Pradesh during July 2014 to June 2016. The study was approved by an Ethical Review Board of the Institution, and informed written consent was taken from the patients for participation in the study. Routine hematologic investigations (complete blood count, bleeding time, clotting time, random blood sugar, HIV, and hepatitis B surface antigen) were done, and panoramic and/or intraoral periapical radiographs were obtained for all patients. The lesions were excised under local anaesthesia or general anaesthesia depending on the extent of the lesion and the general condition and apprehension of the patient [Figures 1-8]. For large lesions, an incisional biopsy was done before excision. The final diagnosis was made after histopathological examination of the excised specimen. The follow-up ranged from a minimum of 6 months to a maximum of 24 months. All patients were evaluated for age, gender, affected site,

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size of the lesion, predisposing factors, and treatment. The statistical data were articulated using the Microsoft Excel computer software statistical package.

**Results**

Out of the 338 cases of intraoral fibrous growths reporting to the institute, 94 (27.81%) were histopathologically confirmed as OLCH. A characteristic female predominance was seen with female to male ratio of 2.24:1 [Graph 1]. The lesion was most frequent in the second and third decade of life with 38 (40.42%) patients belonging to the age group between 21 and 30 years and 20 (21.28%) patients belonging to the age group between 11 and 20 years [Graph 1]. The mean age of occurrence was 28.06 years with standard deviation 13.44.

Exact etiology could not be known in 38.03% patients. Pregnancy was the most common predisposing factor responsible in 34.37% females, comprising 23.40% of total population [Graph 2]. Compromised oral hygiene was noticeable in majority of patients (87.23%). Gingiva was predominantly involved (48.94%) followed by buccal mucosa (17%) [Table 1]. The anterior maxillary labial gingiva was the most commonly involved site followed by posterior maxillary buccal gingival (34.04% and 14.89%, respectively). The sizes ranged in their widest diameter from a few millimeters to about 5.8 centimeters [Figure 6]. In majority of specimens, the photomicrograph revealed fibroblastic proliferation and vast numbers of endothelium-lined vascular spaces infiltrated with lymphocytes, plasma cells, and neutrophils. The lesion was covered by a thin, ulcerated stratified squamous parakeratinized epithelium. Out of 94 patients nine did not report at scheduled follow-up visits or were lost in between. Out of 85 patients who presented at regular follow-up visits, recurrence was seen in four cases (4.71%). Recurrent lesions were treated by surgical excision and scaling and root planning or extraction of offending tooth in one case.

**Discussion**

LCH of the oral cavity exhibits a female predilection and is known to involve the gingiva commonly. Extragingivally, it can occur on the lips, tongue, buccal mucosa, and palate. The growth can occur in any age, but it is predominantly seen in the second and third decades of life. In accordance with the previous studies, gingiva was the principal oral site most commonly involved, and females were affected predominantly in this study. In literature, the reported incidence of PG is 26.8%–32% of all reactive lesions. The incidence in this study was 27.81%, which was similar to other studies. Diverse theories have been described to explain the etiopathogenesis of the lesion. Originally, it was considered to be a botryomycotic infection, however, the role of a staphylococcus or streptococcus infection was later implicated. OLCH is also thought to originate as a response of tissues to minor trauma, chronic irritation due to injury to a primary tooth, exfoliation of primary teeth, eruption of permanent teeth, overhanging restorations, cheek biting, bone spicules, root remnants, etc. The etiology was unknown in 38.30%
cases. However, these patients presented with poor oral hygiene. Mechanical irritants were the causative agents in 16 (17.02%) cases in this study. It is implicated that trauma renders a pathway for invasion of microorganisms, and endogenous substances including angiogenic factors are released, that disturb the vascular system of the affected
area resulting in exaggerated exuberant proliferation of vascular type of connective tissue. Frequent involvement of anterior labial gingiva supports the theory that micro trauma induced by tooth brushing may be a causative factor. Microtrauma induced PG was evident in 6 (6.38%) patients in this study. Hormones, preexisting vascular lesions, food impaction, and periodontitis have also been suggested as etiological factors.[2] Females are more vulnerable because of the hormonal changes that occur in women during puberty, pregnancy, and menopause. “Pregnancy tumor” and “granuloma gravidarum” or PG of pregnancy has been reported to occur in up to 5% of pregnancies.[10] The occurrence of the lesion could be correlated to pregnancy in 23.40% cases in this study.

The use of certain drugs, i.e., antineoplastics, antiretrovirals, epidermal growth factor receptor inhibitors, immunosuppressants, and retinoids are also believed to be associated with the development of LCH.[11] The occurrence of OLCH in one patient inflicted with trigeminal neuralgia could be attributed to the use of carbamazepine in this study.

The clinical presentation is a smooth or lobulated solitary exophytic growth, pedunculated or sessile, which usually bleeds on provocation.[10] The sessile base was the typical clinical feature in 58 (61.70%) cases and pedunculated lesions were seen in 36 (38.30%) cases. This was in accordance with a study which reported 66% lesions of LCH had a sessile base.[12]

The early lesions are highly vascular, red, or reddish purple, often elevated, ulcerated, and bleed easily, whereas older lesions are more collagenized and pink in appearance. Nontender swelling was the chief complaint in 82.97% cases, bleeding in 63.83% cases while burning sensation, altered taste and/or bad breath were the less commonly experienced symptoms.

The smallest lesion excised in this study measured 0.5 cm × 0.7 cm, and the largest was an exuberant lesion measuring 5.8 cm × 5.2 cm attached to the posterior mandible and posterior palate. Lesions that had attained large dimensions due to neglect were common in this study because the institute has a substantial patronage of ignorant rural population from across 8 districts. This population is known to desist treatment until the disease shows significant progression and shows reluctance for follow-up visits.

Histopathologically, the lesion is covered by thin parakeratinized stratified squamous epithelium which is often atrophic and ulcerated. The underlying connective tissue exhibits delicate fibrocellular stroma with vast numbers of endothelium-lined vascular spaces infiltrated with chronic inflammatory cells mainly lymphocytes, plasma cells, and neutrophils.[3] The lobular area of the LCH PG contains greater number of blood vessels with small luminal diameter than the central area of non-LCH PG.[12] The prevalence of calcifications in fibrous lesions of gingiva varies from 20% to 62.8%. The calcified material may vary from mature lamellar type bone to dystrophic such as calcifications which may also resemble globules of cementum.[8]

The differential diagnosis of OLCH should include peripheral giant cell granuloma, peripheral ossifying fibroma, fibroma, peripheral odontogenic fibroma, hemangioma, conventional granulation tissue, hyperplastic gingival inflammation, metastatic cancer, Kaposi’s sarcoma, angiosarcoma, and non-Hodgkin’s lymphoma.[3,13,14]

Conservative surgical excision along with removal of local irritants and trauma inflicting factors is advocated. If the lesion is located in gingiva, excision must be carried down to the underlying periosteum to avoid the probability of recurrence.[7] The use of neodymium-doped yttrium aluminum garnet laser, CO₂ laser, and flashlamp pulsed dye laser have been considered to be successful.[16] Therapeutic alternatives are removal by cryosurgery, curettage, electodesiccation, chemical cauterization, and silver nitrate cauterization.[15-17] Intralesional sclerotherapy with monoethanolamine olate, sodium tetradeyl sulfate, corticosteroids, or injection of absolute ethanol is effective in the treatment of PG.[15,16] OLCH in pregnant patients may resolve on its own without any surgical intervention after

Figure 7: Intraoperative view after excision

Figure 8: Excised specimen
pregnancy. The preventive measures described for pregnant 
women include meticulous oral hygiene maintenance and 
use of a soft bristle tooth brush. Recurrence rate after 
simple surgical excision in our study was 4.71% which 
was similar to the other studies which reported a recurrence 
rate of 3.7% and 5.8%, respectively. However, higher 
recurrence rates ranging from 15% to 23% have also been 
reported in some studies. Recurrence can be attributed to 
incidental excision, repeated trauma, and failure to 
remove etiologic factors.

Conclusion

The clinicopathologic and demographic features of oral 
LCH found in this study were similar to those reported in 
other studies. It is a nonneoplastic lesion that represents a 
tissue growth in response to local irritation or trauma. 
They can originate at uncommon sites and attain unusual sizes. 
Proper diagnosis and treatment are important; surgical 
excision being the treatment of choice. There is a need to 
 prioritize the recognition of the health-care needs of 
population dwelling in rural areas with targeted attempts 
aimed at improving their accessibility to health-care services. 
There is a crucial need to lay emphasis on imparting health education to such sections of the society 
with poor access to health-care services.

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Conflicts of interest

There are no conflicts of interest.

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