

Gingival Lobular Capillary Hemangioma: Clinicopathologic Review of Forty-Five Cases

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Abstract

Background

Lobular capillary hemangioma [formerly, pyogenic granuloma] is an extremely common lesion treated by periodontists in a periodontal surgical clinic and notorious for recurrence.

Methods

We undertook a clinicopathologic review of the entity in order to report patterns and compare with the literature.

Results

Just as reported in the literature, most of the cases were found in females and poor oral hygiene was a prominent consistent finding. Parakeratinization was common but site predilection could not be confirmed.

Conclusion: Most of our findings corroborate the existing literature but there was no male preponderance among children. While hormonal influences remain plausible, our findings corroborate the long-held belief that poor oral hygiene plays a prominent role.

Key Words: Lobular capillary hemangioma, pyogenic granuloma, review

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I. Introduction

Lobular capillary hemangioma [formerly, pyogenic granuloma] is an extremely common lesion treated by periodontists in a periodontal surgical clinic. Since the change of the nomenclature of this entity, research has continued to explore its presentation and possible etiological/associated factors. Because of the common nature of LCH, we undertook a review of cases seen in our periodontal practice within a teaching hospital practice in Southwestern Nigeria. Our findings appear largely consistent with the literature.

LCH has been aptly described as “a common acquired vascular lesion of the skin and mucous membranes”[1] Though the final change in nomenclature of this entity might have occurred more lately, the notion that this lesion is a granuloma [reflecting diagnostic confusion] has survived several decades as reflected in the expression the “lobular capillary hemangioma: the underlying lesion of pyogenic granuloma.”[2] Though several decades old, the study highlighted important diagnostic criteria for LCH namely; a “lobular arrangement of capillaries at its base” and that the lobules consist of discrete clusters of endothelial cells, and the lumina vary from indistinct to prominent. While the diagnostic confusion or dilemma existed, some aspects of its diagnosis remained unequivocal. First is the fact that oral LCH only affects the gingiva, secondly it is not associated with pus and thirdly does not represent a granuloma histologically. On this basis, the entity is neither pyogenic nor a granuloma, meaning that the term “pyogenic granuloma” is a misnomer and from the histologic picture, it is obviously lobular capillary hemangioma [LCH].[3-5]

To the periodontologist, the diagnostic dilemma is not as important as the treatment challenge especially as it relates to recurrence. It is therefore important to continue to report the features of this disease entity in order to increase in our understanding of its possible etiology with a view to achieving better treatment success and less recurrence. To this end, we review 45 cases of gingival lobular capillary hemangioma seen in our periodontal practice/dental hospital over 11 years [2007-2018].

The age of the patients for whom a histologic diagnosis of LCH was made ranged from 11 months to 79 years with a mean age [SD] of 37 years [20.8], higher than reported by Saravana and even higher than

reported by Gordón-Núñez et al in India and Brazilian populations respectively.[6, 7] We found a striking agreement with existing literature on the commonest decades of occurrence as 18 [40 per cent] of the patients were within the second and third decades of life with the vast majority of this [12 /18 or 7 per cent] being within the third decade of life. [8, 9]. There was an overall female predilection seen among our patients consisting of 16 males and 29 female [64 percent female] equivalent to a male: female ratio of 1:1.8 or approximately 1:2. The female predilection of LCH enjoys almost universal acceptance. What was a little different about findings is the absence of male preponderance among children. The reason for the reported female predilection which our findings also corroborate is not far-fetched.

Although the etiology of LCH remains elusive, the position that the lesion represents “a hyperplastic, neovascular response to an angiogenic stimulus with imbalance of promoters and inhibitors” is widely accepted[9, 10]. Because of the obvious female predilection, it is difficult to resist the idea that the source of the “angiogenic stimulus” in females is likely to be hormonal. This was succinctly stated by Yuan et al [the hormones not only enhance the expression of angiogenic factors in inflamed tissue, but also decrease apoptosis of granuloma cells to extend angiogenic effect] and corroborated by our findings. [11] This position is supported by several studies from several authors which postulated those female sex hormones being potential regulators of the production of several growth factors are culprits in the pathogenesis of LCH. One of such growth factors is the vascular endothelial growth factor [VEGF] with elevated amounts particularly associated with pregnancy.[11]Yuan and colleagues further demonstrated that TNF-alpha upregulated the expression of angiopoietin-2 in endothelial cells while a lack of VEGF results in regression of LCH. This position is supported by several studies. [12-14] Our findings corroborate the literature in this regard with 17 sufferers being aged between 20 and 35 years of which 12 [71 per cent] were female.

Sixteen lesions were located in the mandible; 19 in the maxilla while the location of 10 lesions were unspecified making it difficult to compare the location with existing literature. There was a wide variation in the age of the lesions at presentation from 2 weeks to 9 months therefore resulting in various sizes at presentation ranging from small lesions with a volume of 0.02mm³ to large lesions of just over 100mm³ and being from ovoid to irregular in shape.

Of particular interest is the association of the lesions with poor oral hygiene as assessed by the simplified Oral Hygiene Index with 76 percent presenting with either poor oral hygiene or associated bleeding on probing. This finding reiterates the general agreement in the literature that poor oral hygiene is often a precipitating factor in gingival LCH.[12-14]

II. Histopathologic Review

Epithelium: the epithelium was typically stratified squamous with ulceration being a common [23 of 45 or 51%] but not a constant feature. Most of the theories on pathogenesis of LCH suggest an hyperplastic, neovascular response to an angiogenic stimulus with imbalance of promoters and inhibitors [9,10] This was a recurring thread in the histopathologic picture of the 45 cases of LCH with the observation of hyperplastic epithelium in nearly 90 percent of cases [39 of 45] corroborating these theories.

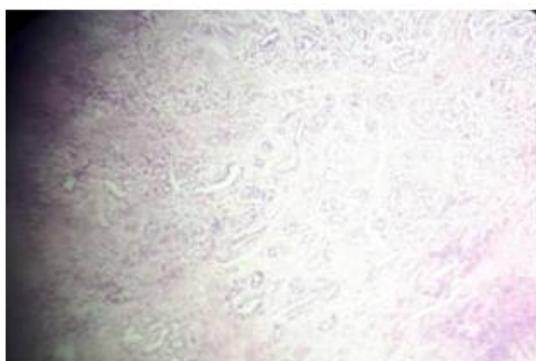
Parakeratinization: this was very common being present in about 90 percent of histologic reports. Epithelial atrophy was present in about 16 percent [7 cases] of histologic sections while ulceration was present in about 25 percent [9 cases]. Spongiosis was a rare a phenomenon though being reported just twice while just a single observation of acanthosis was observed. The connective tissue stroma ranged from loosely collagenised through moderately- to densely collagenised stroma. The latter had associated fibroblastic changes in about a one-sixth [7,15.6%] cases which corresponds to the final of the 3 distinct phases [15] of LCH tagged “involutionary phase” demonstrating intra- and perilobular fibrosis. A little over 10% [5 cases] were hypercellular, and categorized into the so called “early phase” i.e. observation of a compact highly cellular stroma. The remaining cases belonged to the “ capillary phase” which showed highly vascular stroma with abundant proliferating capillary buds and numerous endothelia lined vascular channels. No clear relationship between duration and degree of collagenisation of the connective tissue stroma could be established.

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