A 5-year Review of Oral Pyogenic Granuloma Cases seen at a Nigerian Teaching Hospital, Any Justification for Name Change?

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ABSTRACT

Objective Pyogenic granuloma is a type of reactionary lesion of the skin and mucous membrane. Its aetiopathogenesis is not fully understood, and trauma has been associated with a number of cases. Its name was recently changed to lobular capillary haemangioma (LCH) on the basis that it is not pus- producing and does not contain giant cells. This study aimed at examining the clinicopathologic features of pyogenic granuloma cases at our facility, Dental Centre, University College hospital, Ibadan, Nigeria, between 2013 and 2018 (5 years) if they are in consonance with findings of other studies carried out in other climes upon which the name change was based, in a bid to finding a justification for the change.

Methods The histologic slides and clinical records of 28 cases were retrieved and reviewed using a proforma; 11 males and 17 females, with age range of 11 to 92 (Age for males: Mean/SD- 44.73/24.26; Age for females: Mean/SD- 43.00/21.90). IBM SPSS 23.0 was used for data analysis. Means, standard deviation, relationship among the variables were recorded with results displayed in tables and charts.

Results: Pus discharge was found in two of the cases, giants' cells in 3, 16 had lobular pattern and 12 non-lobular. All the cases showed presence of numerous capillary channels.

Conclusion: The nomenclature change of pyogenic granuloma to lobular capillary hemangioma is partly reflected and supported by the results of this study. However, we equally found cases of pyogenic granuloma which do not support the nomenclature change. Therefore, further studies need to be carried out to ascertain the very nature of cases with pus and giant cells. Although, some studies adduced reasons for the presence of pus in some of the cases, but those reasons apparently do not apply in the cases found in this study. The issue about the presence of giant cells should be further explored.

Keywords: Pyogenic granuloma; lobular capillary haemangioma; capillary channels, giant cells.

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CLINICAL IMPLICATIONS

Correct clinical and histologic diagnosis of pyogenic granuloma certainly has a major bearing on the management of cases. This might in turn address the issue of recurrence commonly associated with this lesion.

INTRODUCTION

Pyogenic granuloma (PG) is a kind of inflammatory hyperplastic soft tissue lesion[1] . The etiology is largely unknown[2] and trauma is often implicated[3], about one third of cases . The lesion, however, is not related to infection and arises as a reactive growth in response to various stimuli, such as plaque and calculus, chronic local irritation, traumatic injury, hormones and certain drugs.[1] It can develop in virtually any part of the body, broadly on skin and mucosa surfaces, like the nostrils, genital tracts, and the oral cavity. [5,4,5] Oral pyogenic granuloma (OPG) clinically appears smooth or lobulated with a pedunculated stalk or a sessile base with a color ranging from light pink through red to purple, depending on the age of the lesion.[5,6] Bleeding may be very severe and difficult to control.[1] OPG is characterized by high cellularity and vascularity evidenced by numerous prominent capillaries.[7,8] The arrangement of these vascular channels gives rise to two histological types namely: Lobular capillary hemangioma(LCH) or non-lobular capillary hemangioma(non-LCH).[9] The lesion has a tendency to bleed, even after a minor traumatic episode, such as during mastication[1]. Treatment involves surgical excision often complicated by recurrence if not adequately excised. Other treatment modalities include the use of lasers (Nd: YAG laser, flash lamp pulsed dye laser), intralesional injection of ethanol or corticosteroid and sodium tetradecyl sulfate sclerotherapy, and cryosurgery.[11,12]

The lesion mimics several other intraoral lesions such as peripheral giant cell granuloma, peripheral ossifying fibroma, fibroma, peripheral odontogenic fibroma, hemangioma, conventional granulation tissue, hyperplastic gingival inflammation, Kaposi's sarcoma, bacillary angiomatosis, angiosarcoma, and non-Hodgkin's Lymphoma.[9]

Pyogenic granuloma has undergone a series of nomenclature modifications due to its similarity with many other reactive hyperplastic lesions of the oral cavity and misunderstanding about its aetiopathogenesis.[10,11] It has severally been named otomycosis hominis, botryomycosis hominis, telangiectatic granuloma, benign pedunculated granuloma, septic granuloma, hemangiomatous granuloma, eruption capillary hemangioma. However, the latest name change, lobular capillary hemangioma, is what necessitated the need for this study.

The lesion exhibits profuse proliferation of highly vascular elements mimicking granulation tissue. The endothelial-lined vascular channels are engorged with erythrocytes. These vascular channels are composed of capillary sized vessels arranged in lobules and this characteristic arrangement is the basis for renaming pyogenic granuloma as "Lobular capillary hemangioma" (LCH) .[8,11]

The name pyogenic granuloma is currently being considered a misnomer because the lesion is not pus-producing, does not contain giant cells histologically and is not limited to pregnant patients alone.[12]

The aim of this study was mainly, therefore, to critically examine the cases seen at our facility in order to compare our findings with those from other climes upon which the name was changed.

MATERIALS AND METHODS

Ethical approval for this study was obtained from the Research Ethics Committee of the – College of Medicine, University of Ibadan/University College Hospital (UI/UCH). The case-files and histologic slides/reports of 28 patients diagnosed histologically to have presented with oral pyogenic granuloma were retrieved from the Record section and Pathology laboratory, respectively. Demographic, clinical features and histologic features were extracted from the secondary data sources with the aid of a proforma. A single Senior Registrar in the Oral Pathology Department retrieved and recorded the histologic findings to avoid inter-observer bias and ensure consistency of inferences. The data were entered into and analyzed with IBM SPSS software version 23. Simple descriptive and comparative analyses were performed, with the test of statistical significance set at ≤ 0.05.

RESULTS

A total of the 28 cases of OPG were diagnosed over the study period consisting of 11(39%) males and 17 (61%) females with male: female ratio of 1:1.5. The age range was 11 to 92years with a mean age of 43.68/22.43 years (mean/SD) and peak age incidence was in the 10-19years range (Table 1). The ages of the patients were evenly distributed between the genders with the mean age (SD:21.90) for females being 43 years and 44.73years (SD:24.26) for males.

All the cases had evidence of vascular channels (capillaries) on histology and only two showed

presence of pus clinically as seen from the histology slides and casefiles, respectively. Only 3(10.71%) of the 28 cases exhibited giant cells. There was an inverse relationship between the two variables i.e pus discharge and giant cells. Lobular arrangement of capillaries was found in 16 (57.10%) of the 28 cases (Non-lobular arrangement in 42.90%). Pregnancy constituted 7.10% (2cases). Further analysis (table 4 below) showed no significant relationship between pus discharge and presence of inflammatory cells (p-1.000), possibly due to the small sample size. In the same vein, no significant relationship was found between lobular pattern of capillaries and presence of giant cells. (Fischer's exact test; p-0.238). Furthermore, the presence of giant cells in the lesions had no bearing on lobular pattern of capillaries.

Table 1: Age group of the patients

Age group (years)	n(%)
0-9	0(0.0)
10-19	6(21.4)
20-29	4(14.3)
30-39	1(3.6)
40-49	5(17.9)
50-59	4(14.3)
60-69	4(14.3)
70-79	2(7.1)
80-89	1(3.6)
90-99	1(3.6)

Table 2: Site of the Lesion

Site	Frequency (n)	Percent (%)
Maxillary gingiva	12	42.8
Mandibular gingiva	11	39.3
Tongue	2	7.1
Floor of the mouth	1	3.6
Lip	1	3.6
Extraoral	1	3.6
Total	28	100.0

Table 3: Clinical and histologic variables of Oral Pyogenic granuloma

Variables	n (%)
Age (years)	
Range	11-92
Mean (± SD)	43.7(±22.4)
Gender	
Male	11 (39.0)
Female	17 (61.0)
Male: Female	1:1.5
Clinical	
Pus	
Present	2 (7.1)
Absent	26 (92.9)
Histology	
Vascular channels Present	28 (100.0)
Vascular channels Absent	0 (0.0)
Lobular pattern	16 (57.1)
Non-lobular pattern	12 (42.9)
Giant cells	3 (10.7)
No Giant cells	26 (89.3)

Table 4: Cross tabulation of presence of pus discharge and presence of inflammatory cells

Presence of pus discharge	Presence of inflammatory cells		Total	
	Yes	No		P-value
Yes	2	0	2	1.000
No	25	1	26	
Total	27	1	28	

Table 5: Cross tabulation of lobular arrangement of capillaries and presence of giant cells

Presence of a lobular arrangement of capillaries	Presence of giant cells		Total	
	Yes	No		P-value
Yes	3	13	16	0.238
No	0	12	12	
Total	3	25	28	

DISCUSSION

Pyogenic granuloma is a reactive hyperplastic lesion which affects intraoral and extraoral sites lined by mucous membrane.[5,13,14] The mean age of Pyogenic granuloma from this study was 43.7 years which was higher than 30 years and 33 years previously reported by Effiom et al.[15] and Lawoyin et al.[15] respectively. The reason(s) for the differences in mean age from previous studies compared to that of this study is not immediately apparent, but may be related to the smaller sample size from this study.

The finding of this study of male: female ratio of 1:1.5 was consistent with most previous studies that found a preponderance of oral pyogenic granuloma in females [1, 15, 16. The] predilection of OPG for females has been attributed to the effects of female hormones which favor vascular endothelial proliferation [11].

Most of the lesions in this study were found on the marginal gingiva of the upper jaw, particularly the interdental papilla, which is similar to findings of previous studies.[16,17] Michael et al and many other studies[3,12,16] reported that 75% of intraoral pyogenic granuloma is found on the gingiva and the rest can be found on the buccal mucosa, lip and tongue. Findings about sites in this study are not too different from the ones previously reported in other studies, with the gingivae accounting for 82.1% of cases, followed by the tongue (7.1%) and lip, floor of the mouth and extraoral sites accounting for the rest.

This study, like previous studies, demonstrated two histological types of pyogenic granuloma[2,6,9],lobular and non-lobular pyogenic granuloma, showing almost equal distribution in our study. In addition, there was no reported case of bleeding from toothbrush or any form of physical irritation in all the cases examined despite the presence of several capillaries within the lesion. This may be due to late presentation which could lead to the development of more fibrous tissue within the lesion.[12,16,18] Although, pyogenic granuloma normally does not present with pus[2,18,19], certain studies have found pus in some cases and this was attributed to contamination by oral microbes in ulcerated lesions which is in consonance with findings of this study as well.[20] The nomenclature change of pyogenic granuloma to lobular capillary haemangioma does not seem to tally with the discovery of giant cells in 3(> 10%) of the lesions in this study that were histologically diagnosed pyogenic granuloma, except they were misdiagnosed. This percentage is large enough to warrant a search or further study on a separate entity or subset of lobular capillary haemangioma that can be termed a granuloma, as many studies on this subject matter already opined that pyogenic granuloma is not a granuloma.[14,16,21], hence the name change. Furthermore, the name lobular capillary haemangioma is not all inclusive in that it does not factor in its non-lobular variant as equally observed by Olusanya et al.[18]

Our study showed no significant association between presence of giant cells and age of the patients, neither was there between giant cells and lobular histologic pattern. Our study found giants cells more in younger individuals. There is no immediate reason that could be adduced to this.

CONCLUSION

The nomenclature change of pyogenic granuloma to lobular capillary haemangioma is partly reflected and supported by our findings at the Dental Centre, University College Hospital, Ibadan, Nigeria, which includes presence of numerous capillaries and lobular pattern. Although, the presence of pus may be easily explained as mentioned in some studies, there is still no scientific explanation for the detection of giant cells. Therefore, further studies with larger sample

sizes will be required to answer some of the questions surrounding the nomenclature change.

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Conflict of Interest

None declared

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