

Prevalence, Pattern and Distribution of Gingival Overgrowths among Patients at the Dental Centre of a Tertiary Hospital in Lagos Nigeria

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Abstract

Background: Gingival overgrowths has been well reported, however its behavior has not received much research attention in Nigeria. This study assessed the prevalence, pattern and distribution of gingival overgrowths in a cosmopolitan city in Nigeria in a retrospective study of 140 patients seen between 2006 and 2020 at the Dental centre of the Lagos state University Teaching Hospital Ikeja Lagos Nigeria. Histopathologic reports were accessed from the Oral Pathology department of the same institution. The demographics and distribution of the lesions were noted from the records. SPSS 21 was used, descriptive statistics was carried out for both continuous and categorical variables. Relationship between the diagnoses and the independent variables, and also of tooth mobility were carried out using Pearson's chi square, significance was determined at $p \leq 0.05$. Female/male ratio was 2.2:1 and mean age was 36.6 ± 17.7 . Prevalence of gingival overgrowth was highest among the 31-40 year olds. The anterior sextant of the maxilla and the buccal/labial location were commonest sites. Pyogenic granuloma has the highest prevalence of 62.9%, 57.2% of the lesions were pedunculated while 38.6% were associated with tooth mobility. There is statistically significant relationship between the histological diagnoses and the age groups, nature of the lesions and tooth mobility ($p < 0.05$). Pyogenic granuloma was higher in this study than elsewhere, the strong relationship with age, high rate of recurrence of some and malignant lesions which may mimic reactive gingival lesions regardless of the age of the patients seen in this study demands further research and careful note in diagnosis and management.

Keywords: Prevalence, Overgrowths, Histopathology, Reactive, Granuloma, Ossifying.

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INTRODUCTION

Gingival overgrowths are enlargements commonly found on the marginal or attached gingiva or both arising from proliferation of interdental papilla or the facial tissues [1]. They may be localized or generalised, may be pedunculated or sessile in nature. Gingival enlargement is further classified into five groups; inflammatory enlargement, drug-induced enlargement, enlargement associated with systemic diseases or conditions, neoplastic enlargement, and false enlargement [2]. They are often slow growing, tumor-lesions with the size varying from small barely

perceptible grain size to big fist size when localized depending on time of presentation [1, 3, 4].

Most of these lesions present with inflammation and granulation tissue as a result of exaggerated fibroblast proliferation and manifest as an overgrowths called reactive hyperplasia. Reactive gingival lesions according to Kfir *et al.*, include pyogenic granuloma (PG), peripheral giant cell granuloma (PGCG), fibrous hyperplasia (FH) and peripheral ossifying fibroma (POF) [5]. The prevalence of reactive gingival lesions as estimated in a study by Effiom *et al* was 5.6%, Pyogenic granuloma was the

most common lesions constituting 57%, of which pregnancy induced accounted for 9.5%, fibroepithelial hyperplasia and peripheral ossifying fibroma were 14.3% and 10.7% respectively [3]. The female-to-male ratio ranged from 1.7:1 to 2.5:1 from different studies [4, 5]. The lesions are most prevalent in the second to the third decade of life and least common in the 7th decade and above [3, 4]. Buccal gingiva is the commonest site of occurrence while distribution on maxilla and mandible is similar [3, 4]. A study reported 51.6% of the lesions occurring in the anterior sextants [4]. Recurrent lesions accounted for 2.9% majority of which are pyogenic granuloma [3]. A large proportion of these lesions are initiated by exposure to chronic irritation and low-grade trauma from subgingival plaque and calculus, tobacco smoking, irregular or sharp margins of carious or fractured tooth/fillings and friction from ill-fitting dentures and faulty restorations [1-5]. In females, these irritation is further aggravated by the effect of oestrogen and progesterone [1-5].

Other gingival lesions include Juvenile ossifying fibroma (JOF), a rare slow-growing fibro-osseous lesion common in young individuals, sometimes clinically aggressive and most commonly found in the mandible [6].

Squamous papilloma (SQ) is a pinkish white punched out, slow growing oral lesion but relatively rare in the gingiva. It is associated with human papillomavirus (HPV) and commoner in males [7, 8].

Congenital gingival granular cell tumor (CGGCT) also called Newmann's tumor is very rare with an incidence of 0.0006%. It is a slow growing soft tissue lesion found in the newborn which may hinder feeding [9].

Gingival squamous cell carcinoma (GSCC) is an uncommon malignancy of the mouth accounting for about 10% of all carcinomas of the mouth. This malignancy easily simulates inflammatory lesions of tooth origin [10, 11].

Most of the studies carried out in this environment have concentrated on reactive lesions [3, 4], therefore, this study aimed to assess the prevalence, pattern and distribution of localised gingival growths and enlargement as a whole among dental patients seen in Periodontology unit of Lagos State University Teaching Hospital, Lagos, Nigeria. The relationship between the mobility of the adjacent teeth and the lesions was also determined.

METHODOLOGY

This was a retrospective study of the histologic diagnosis of gingival lesions from 140 patients seen between 2006 and 2020 at the Periodontology unit of the Dental centre of the Lagos state University Teaching Hospital Ikeja Lagos Nigeria. Histologic

reports were accessed from the Oral Pathology department of the same institution. The age, sex, location and distribution of the lesions in the gingiva and jaws (upper anterior sextant (UAS) upper left posterior sextant (ULPS), upper right posterior sextant (URPS), Lower anterior sextant (LAS), lower left posterior sextant (LLPS) and lower right posterior sextant (LRPS)) were retrieved from the medical records. Statistical analysis was done using SPSS version 21. Descriptive statistics were carried out using mean \pm standard deviation (SD) median, range, maximum and minimum for the continuous variables while frequency and percentages (%) were used for the categorical variables. Relationship between the diagnosis and the independent variable, as well as assessment of tooth mobility as a sequelae of these lesions were carried out using Pearson's chi square and Fisher's exact as appropriate. Significance level was determined at $p \leq 0.05$.

RESULTS

140 cases were drawn from patients that presented at the periodontology clinic of the Lagos state university teaching hospital and histologically diagnosed at the oral pathology department of the same institution between 2016 and 2000 (Figure-2). Female/male ratio was 2.2:1 and mean age was 36.6 ± 17.7 ranging from a 3 day old to 75 years. Prevalence of gingival overgrowth was highest among the 31-40 year olds 38(27.1%) followed by the 21-30 year olds 29(20.7%) the least was found in those less than 1 year old and those above 70 years 2(1.4%) (Figure-1). The maxilla was the commoner site with prevalence of 74(52.9%) while the mandible was 66(47.1) (Table-1). The upper anterior sextant was the region of commonest occurrence with 56(40%) followed by the lower anterior sextant 20(27.9%), the least was in the upper right posterior sextant 8(5.7%) (Table 1). Buccal/labial location was commonest 92(65.7%) followed by the palatal/lingual 25(17.9%), the least was in the buccopalatal/buccolingual 23(16.4%).

Pyogenic granuloma has the highest prevalence of 88(62.9%), followed by Peripheral ossifying fibroma 24(17.1%) the least were squamous papilloma and peripheral ameloblastoma which were 1(0.7%) each (Figure-3). Notably there were 2(1.4%) cases of poorly differentiated squamous cell carcinoma in a 6year old and a 63 years old. 80(57.2% of the lesion were pedunculated while 60(42.8% were sessile. 54 cases (38.6%) were associated with mobile tooth. 9(8.4%) of the patients presented with underlying conditions of which high blood pressure and pregnancy accounted for 4(2.9%) each (Figure-3). Recurrent lesions were 24(17.1%), it is highest among the 51-60 age group 4(30.8%) followed by the 31-40 and 1-10 year olds with 8 (25.1%) and 1(25.1%) respectively, none was found among the 71-80 year olds.

Cross tabulation revealed a statistically significant relationship between the histological diagnoses and the age groups (P=0.001), this is also true

of the nature of the lesions (p=0.03) and associated tooth mobility (p=0.001). However the relationship with other variables were not significant (Table-2).

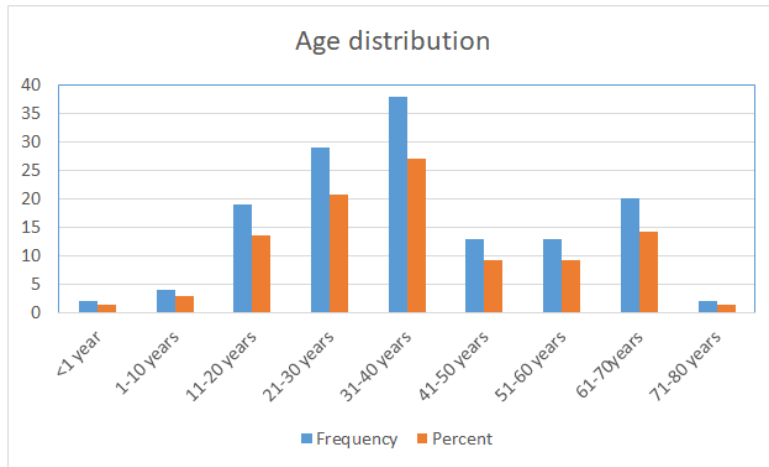


Figure 1: Age distribution

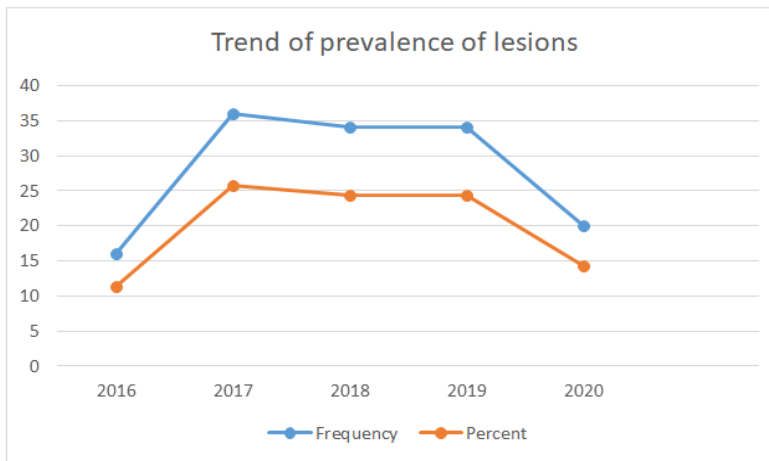


Figure 2: Trend of the Lesions

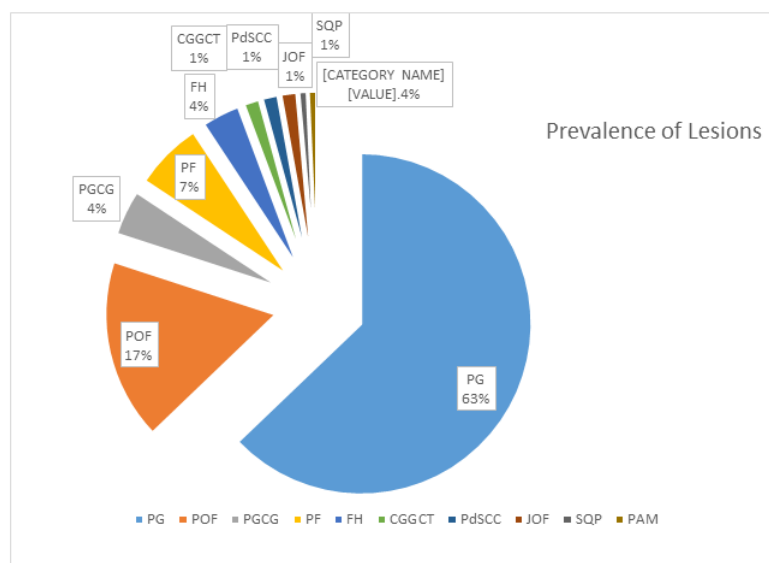


Figure 3: Prevalence of the Lesions

Table-1: Descriptive statistics of the variables

Variable		n(%)
Sex	Male	44(31.4%)
	Female	96(68.6%)
Jaw	Maxilla	74(52.9%)
	Mandible	66(47.1%)
Sextant	UAS	56(46%)
	ULPS	13(9.3)
	URPS	8(5.7%)
	LAS	39(27.9%)
	LLPS	13(9.3%)
	LRPS	11(7.9%)
Location	Buccolabial	92(65.7%)
	Linguopalatal	25(17.9%)
	Buccopalatal	23(16.4%)
Recurrence	Yes	24(17.1%)
Attachment	Pedunculated	80(57.2%)
	Sessile	60(42.8%)
Mobility	Yes	54(34.6%)
Underlying conditions	HIV	3(2.1%)
	Anti hypertensives	4(2.9%)
	Contraceptives	1(0.7%)
	Pregnancy	4(2.9%)

Table-2: Relationship of the histologic diagnoses and the variables

Variables		Histologic Diagnosis											df	p	
		PG	POF	PCCG	PF	FH	CGGCT	PdSCC	JOF	SQP	PAM	Total			
Year	2016	8	3	1	1	2	1	0	0	0	0	0	16	1	.389
	2017	22	5	3	2	1	0	1	1	1	0	0	36		
	2018	25	3	2	3	0	0	0	1	0	0	0	34		
	2019	19	9	0	3	1	1	1	0	0	0	0	34		
	2020	14	4	0	0	1	0	0	0	0	0	1	20		
Age groups (years)	<1	0	0	0	0	0	2	0	0	0	0	0	2	1	.001*
	1-10	2	0	0	1	0	0	1	0	0	0	0	4		
	11-20	9	4	1	1	1	0	0	2	1	0	0	19		
	21-30	22	5	1	1	0	0	0	0	0	0	0	29		
	31-40	24	7	2	3	1	0	0	0	0	1	1	38		
	41-50	9	0	1	2	1	0	0	0	0	0	0	13		
	51-60	7	5	0	0	1	0	0	0	0	0	0	13		
	61-70	14	3	1	0	1	0	1	0	0	0	0	20		
71-80	1	0	0	1	0	0	0	0	0	0	0	2			
Sex	Male	30	4	2	3	3	0	0	1	0	1	44	1	.266	
	Female	58	20	4	6	2	2	2	1	1	0	96			
Jaw	Maxiilla	47	13	2	5	2	1	2	2	0	0	74	1	.399	
	Mandible	41	11	4	4	3	1	0	0	1	1	66			
Sextant	UAS	39	9	1	4	1	1	0	1	0	0	56	9	.191	
	ULPS	6	3	0	1	1	0	2	0	0	0	13			
	URPS	4	1	1	0	1	0	0	1	0	0	8			
	LAS	24	8	2	2	0	1	0	0	1	1	39			
	LLPS	6	2	2	2	1	0	0	0	0	0	13			
	LRPS	9	1	0	0	1	0	0	0	0	0	11			
Location	Buccal/labial	56	17	5	6	4	2	0	0	1	1	92	18	.347	
	Lingual/ palatal	16	3	0	1	0	0	2	1	0	0	23			
	Buccopalatal	16	4	1	2	1	0	0	1	0	0	25			

Nature	Pedunculated	56	12	4	4	1	1	1	0	1	0	80	1	.03*
	Sessile	32	12	2	5	4	1	1	2	0	1	60		
Recurrence	No	70	20	6	8	5	2	2	1	1	1	116	9	.241
	Yes	18	4	0	1	0	0	0	1	0	0	24		
Mobility	No	63	16	0	2	1	2	1	0	1	0	86		.001*
	Yes	23	8	6	7	4	0	1	2	0	1	54		
Underlying conditions	None	81	22	4	8	5	2	2	2	1	1	128	1	.318
	HIV	0	0	2	1	0	0	0	0	0	0	3		
	Antihypertensive drugs	3	1	0	0	0	0	0	0	0	0	4		
	Contraceptives	1	0	0	0	0	0	0	0	0	0	1		
	Pregnancy	3	1	0	0	0	0	0	0	0	0	4		

*Statistically Significant

DISCUSSION

The lesions were more prevalent and almost equal between 2017-2019 while it was less in the other years, this is because oral pathology laboratory of the institution was at its infancy in 2016 and Covid 19 Pandemic and the attendant lock down caused the low patient inflow in 2020 (Figure-2). There is higher female predilection in the study similar to other studies (Table-1) and this has been associated with the influence of female sex hormone on gingival connective tissue. Eostrogen causes alteration in blood vessels while progesterone stimulates production of inflammatory mediators. The resultant effect is increased vascular permeability and gingival oedema with increased response to bacterial plaque [12].

The age of highest prevalence is in the third and fourth decades of life (figure 1) similar to another study in Northern Nigeria [4] but differs from the second and third decades reported by Effiom *et al.*, in Lagos Nigeria [3]. The reason for this may be due to the fact that 3rd and 4th decade of life correspond to the reproductive age during which hormonal fluctuation is prevalent. Moreso, PG which is the most prevalent lesion seen in this study occurs more in females and young adults under the age of 40 years. The least prevalence was found in the first and the eighth decades of life. These lesions are generally uncommon in age group above 65yrs [4]. The prevalence of gingival enlargement was more in the maxilla, incisor/canine region and in the buccal/labial surface of gingiva [3, 4].

Pyogenic granuloma has the highest prevalence (62.9%) of all the lesions seen in this study like many other studies [1-3, 13], however, a previous research works reported lower figures [3, 4]. The high prevalence may be due to the fact that nearly half (47.9%) of the study sample belong to age group 20yr-40yr which corresponds to the most prevalent age for pyogenic granuloma. Long standing irritation from plaque and calculus accumulation, rough edges of carious lesion or restorations have been implicated as predisposing factors [4, 13]. The frail and highly vascular nature of Pyogenic granuloma makes it to be easily traumatized during mastication and regular oral hygiene. The discomfort posed by bleeding and pain

from the traumatized lesion make more of these patients to seek help.

The prevalence of Peripheral ossifying fibroma (17.1%) in our study was higher than in other studies [1, 4, 14] but lower than that reported by Effiom *et al.*, [3]. However, like in this study female preponderance was reported by other authors [1, 4, 14].

Pregnancy induced gingival enlargement is lower when compared to others and anti-hypertensive drug induced gingival enlargement is very low (Table-1) compared to an Indian study that reported 27.1%, this may be because a larger population of 331 subjects was involved [15]. Majority of the lesions are pedunculated and this is quite significant (Table-2). Recurrence is highest for Juvenile ossifying fibroma followed by Pyogenic granuloma which is characteristic of both lesions (Table-2). In Benin, Nigeria, Azodo and coworkers reported only 2 cases of recurrent lesion both of which were of Peripheral ossifying fibroma [16].

Poorly differentiated Squamous cell carcinoma were found in 2 cases in this study and each occurred at the extreme of the age groups, while age and dwindling immune capacity can be explained for the female 63 year old, it is a rare occurrence in a child (Table-2) [10, 17, 18].

More than half of the teeth associated with the lesions were mobile and this can be explained by the areas predisposed by the lesions which may stagnate plaque and calculus, and the possibility of direct infiltration of the periodontal attachment structures by the lesions.

CONCLUSION

Much as gingival enlargement in this study followed global pattern and distribution, the prevalence of Pyogenic granuloma is higher than elsewhere. The strong relationship with age demands specific observance in the second to fourth decades for the lesions and further research to decipher the cause and preventive measures applicable. The high rate of recurrence in Juvenile ossifying fibroma and Pyogenic granuloma may require both medical and surgical

approaches in the management. Careful note should be taken to suspect malignant lesions which may mimic reactive gingival lesions regardless of the age of the patients seen in this study. The associated tooth mobility in a large proportion of the cases suggests the need for meticulous attempt at the management to prevent tooth loss and its attendant sequelae.

Conflict of interest: None.

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