Localized Reactive Lesions Of The Oral Cavity: A Review Of 246 Cases In Ibadan

A O Akinyamoju, B F Adeyemi, B Kolude

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Abstract

Background and Aim: Localized reactive lesions (LRLs) of the oral cavity are tumor like lesions that result from chronic irritation of the oral mucosa and it is characterized by exuberant tissue response to irritants. The aim of this study was to determine the distribution and the relative prevalence of LRLs of the oral cavity, diagnosed at the University College Hospital Ibadan, over a 21 year period.

Materials and Methods: A retrospective review of cases diagnosed as localized reactive lesions of the oral cavity obtained from the histopathological records of the Department of Oral Pathology/Oral Medicine, University College Hospital Ibadan between 1990 and 2011 was carried out. Demographic and clinical data such as age, gender, site of lesion, histopathological diagnosis and history of recurrences were extracted from the records and analyzed

Results: LRLs accounted for approximately 14.2% of all biopsies seen within the study period. Pyogenic granuloma (PG) was the most common histopathological subtype accounting for 49.2% of the cases. The most common site of occurrence was the gingivae making up 76.4% of cases. There was a female preponderance of 1.5:1. The mean age at presentation for LRLs was 35.7±19.5 years while the peak age was the 3rd decade of life. All recurrences were PG of the gingivae in female patients only.

Conclusion: The major findings in this study are similar to those of previous studies.

INTRODUCTION

Reactive lesions are non neoplastic swellings that result from chronic tissue injury (1, 2). They are related but have different names due to variation in the anatomical site, clinical or microscopic appearance (1-3). They include pyogenic granuloma (PG), pregnancy epulis (PE), peripheral giant cell granuloma (PGCG), peripheral ossifying fibroma (POF), fibrous epulis (FE), fibro-epithelial polyp (FEP), irritation fibroma (IF), focal fibrous hyperplasia (FFH) and denture induced hyperplasia (DIH). *The oral cavity is vulnerable to various chronic and persistent irritating factors due to its various functions, such as masticatory and protective roles. It serves as the portal of entry into the gastrointestinal tract, thus being exposed to diverse substances that may cause trauma.*

LRLs are due to low grade irritation caused by a number of local factors including dental plaque and calculus, sharp edges of carious teeth and ill fitting or faulty restorations/appliances. Hormonal factors have also been implicated (1-3).

The response to tissue injury is characterised by exuberant tissue repair. The reason for this is unknown, but the important feature is the concurrent inflammation and repair that takes place with the attendant production of granulation tissue in response to chronic inflammation (2, 3).

Though these lesions are not life threatening, they are frequently encountered lesions in man (4).They may occur on any surface of the oral mucosa presenting as small painless masses, of varying size.Duration may be for weeks to months and may ulcerate due to trauma. They present as sessile, pedunculated or leaf like swellings (1-3) and their clinical features depend on the phase of development of the lesion (1). In the early phase, they are highly vascular, reddish and tend to bleed easily, while appearing pink, firm and relatively avascular in the late phase (1-3).

Histologically, their features are quite distinct though an overlap may exist. A diversity of features ranging from granulation tissue with massive chronic inflammatory cell infiltrate and tissue oedema to relatively non inflamed and avascular collagenous tissue may be seen (1-3).

Treatment is by elimination of chronic irritants and surgical excision. There is a tendency towards recurrence which is often attributed to persistent trauma or incomplete excision. This study aims to determine the relative prevalence and clinicopathological features of LRLs of the oral cavity seen at the University College Hospital, Ibadan, Nigeria.

MATERIALS AND METHODS

The surgical day books of the Oral Pathology Department, University College Hospital, Ibadan, were examined and all entries made as LRLs of the oral cavity from January 1990 to December 2011 were included in the study. LRLs were classified into nine groups: pyogenic granuloma, pregnancy epulis, peripheral giant cell granuloma, peripheral ossifying fibroma, fibrous epulis, fibro-epithelial polyp, irritation fibroma, focal fibrous hyperplasia and denture induced hyperplasia. Cases with incomplete records were excluded. Demographic and clinical data such as age, gender, site of lesion and histopathological diagnosis were extracted from the medical records of the patients. The haematoxylin and eosin (H&E) slides of cases were also retrieved and reviewed by two experienced Oral Pathologists to verify the diagnosis. Cases were analysed according to age, gender, site of the lesions and histopathological subtype while data was presented using summary statistics and analysed with the SPSS version 16.0.

RESULTS

A total of 1730 oral biopsies were reviewed over the study period of which 246 were histopathologically diagnosed as LRLs of the oral cavity. This constituted 14.2%of the entire biopsy specimen seen within this period. PG was the most common histological sub-type with 121 (49.2%) cases followed by FE with 43 (17.5%) cases while 38 (15.4%)cases were IF and 22 (8.9%) cases were those of FEPs. LRLs occurred in both the young and old within an age range of one to 87 years (mean=35.7 ± 19.5years) with a peak age of 20-29 years (Figure1). There was no statistically significant relationship between age and LRLs (χ^2 = 67,384, df =56, p= 0.142). Males with LRLs were slightly younger than their female counterparts, but there was no statistically significant difference in the mean age of both genders. (t= -0.904, df= 244, p=0.367).

LRLs were twice as frequently diagnosed in females compared to males, with about 68.7% of cases in females. However, there was no statistically significant relationship between gender and LRLs. ((χ^2 = 8.052, df = 7,p= 0.328). A similar trend was observed in most of the histological sub-types. About 39 (32.2%) of PG were diagnosed in males and 82 (67.8%) in females with an age range of two to 87 years (mean 35.4 years). About 23.3% (10) of FE were diagnosed in males and 76.7%(33) in females with an age range of 8-65 years, while 65.8% (25) of all cases of IF were diagnosed infemales with an age range of five to 70 years (mean 34.8 years)

Table 2 shows the site distribution of the various histological types of LRLs in the oral cavity. Gingival lesions were the most common with 188 (76.4%) cases followed by 20(8.1%) on the tongue, 16(6.5%) lips, 13 (5.3%) cheek and nine (3.7%) on the palate. The relationship between site and LRLs was statistically significant ((χ^2 = 636,780, df = 5, p= 0.001). Of the 188 gingival lesions 131 (69.7%) were located in the incisor-canine area, 24 (12.8%) in the premolar region, 33 (17.6%) in the molar and retromolar areas. The most common LRLs seen on the gingivae was PG (100/188) followed by FE (43/188). PG was also the most frequently diagnosed LRLs on the tongue with 8(40%) cases followed by FEP accounting for about 30% (6) with six cases while on the buccal mucosa, FEP was the most frequently diagnosed LRLs with five cases (38.5%) followed by IF with (4/13).On the palate, PG was the most common (4/9), while IF was the most common on the lips (8/16). No case of denture induced hyperplasia was recorded.

Nine cases (3.7%) were recorded to have recurred, all of which were gingival lesions and were in females patients. Five of the recurrences occurred in the 2nd decade of life, one in the 3rd decade, two in the 6th decade and one in the 7th decade. The range for the recurrence of lesion after surgical intervention was two months to eight years. One of the cases had two recurrences, first was eight years after the initial intervention, and the second was seven years after the first recurrence.

Table 1

Histopathological distribution of LRLs of the oral cavity

Histopathological types	Frequency	(%)	Gender		Age	Mean	Peak Age
			M	F	Range	Age	Group
Irritation Fibroma	38	15.4	13	25	5-70	34.8	30-39
Fibro epithelial polyp	22	8.9	10	12	1-77	39.0	40-49
Focal fibrous hyperplasia	6	2.4	3	3	14-50	31.0	20-29
Pyogenic granuloma	121	49.2	39	82	2-87	35.4	10-19
Peripheral giant cell granuloma	9	3.7	2	7	7-69	38.1	0-9, 60-69
Fibrous epulis	43	17.5	10	33	8-65	35.6	20-29
Peripheral ossifying fibroma	4	1.6	0	4	14-60	41.7	-
Pregnancy tumor	3	1.2	0	3	28-38	33.7	30-39
Total	246	100.0	77	169			

Figure 1

Distribution of LRLs according to age and gender

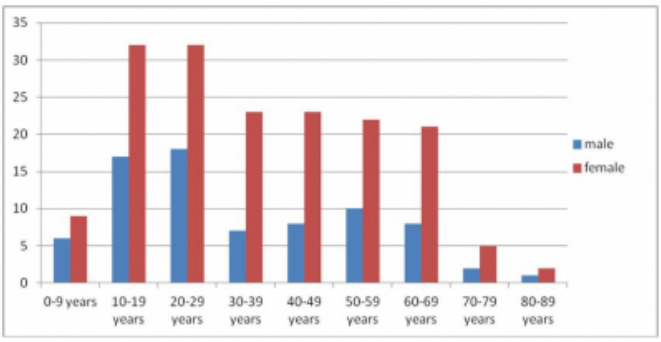


Table 2

Site distribution of histopathological types of LRLs

Histopathological Types	Site					
	Gingivae	Tongue	Buccal mucosa	Palate	Lips	Total
Irritation Fibroma	21	4	4	1	8	38
Fibro epithelial polyp	7	6	5	0	4	22
Focal fibrous hyperplasia	3	1	1	0	1	6
Pyogenic granuloma	100	8	3	7	3	121
Peripheral giant cell granuloma	7	1	0	1	0	9
Fibrous epulis	43	0	0	0	0	43
Peripheral ossifying fibroma	4	0	0	0	0	4
Pregnancy Epulis	3	0	0	0	0	3
Total	188(76.4%)	20(8.1%)	13(6.5%)	9(5.3%)	16(3.7%)	246(100%)

Figure 2

Pyogenic granuloma showing numerous vascular channels and inflammatory cell infiltrate. (H&E X 100)

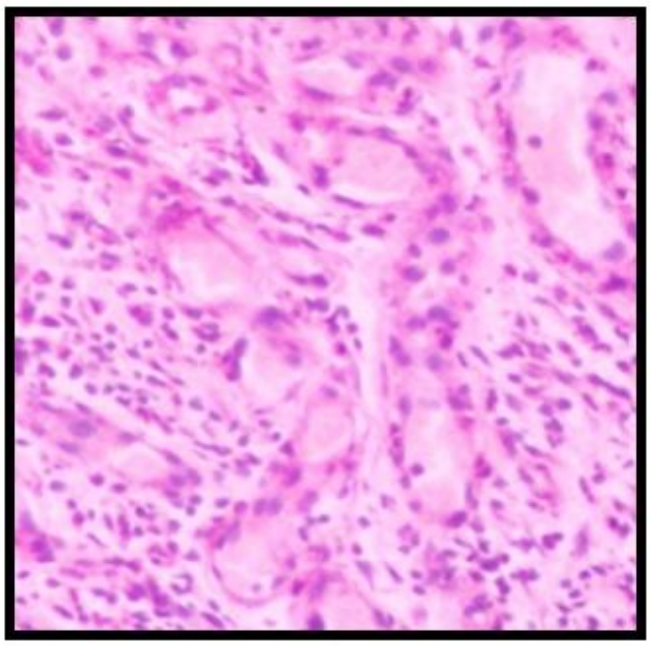


Figure 3

Fibrous epulis showing dense collagen bundles (H&E X 100)

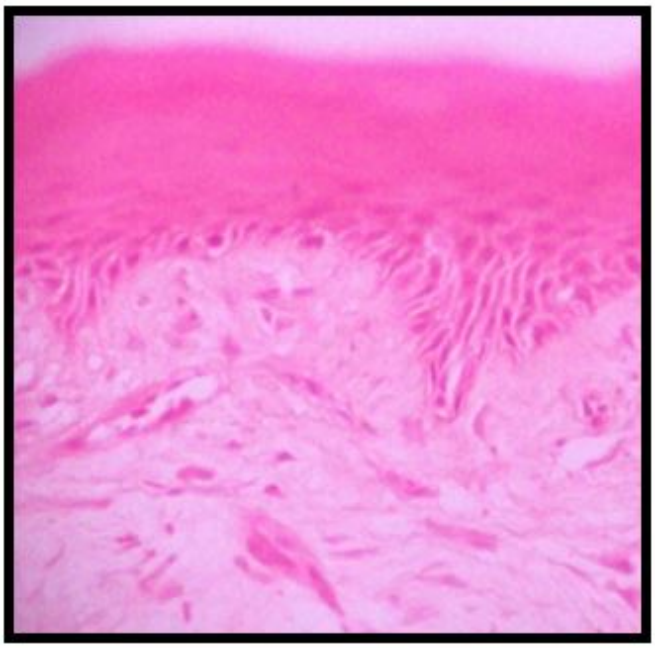


Figure 4

Peripheral ossifying fibroma showing irregular calcifications (H&E X 100)

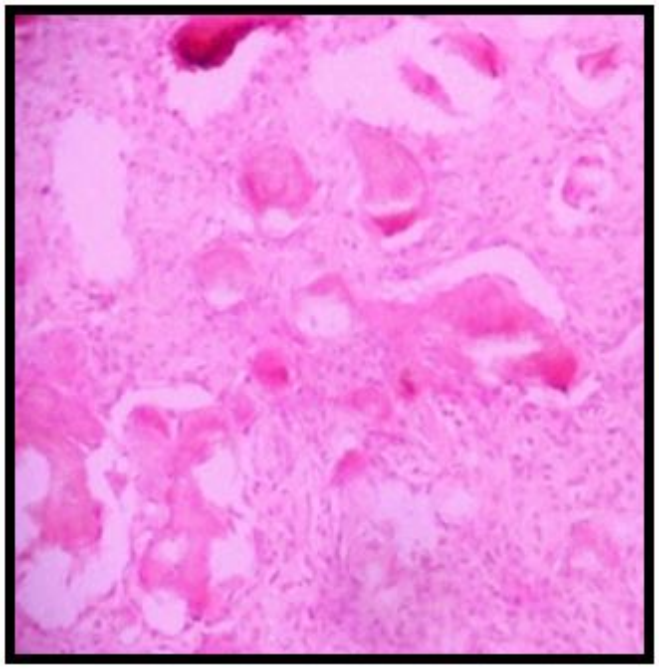
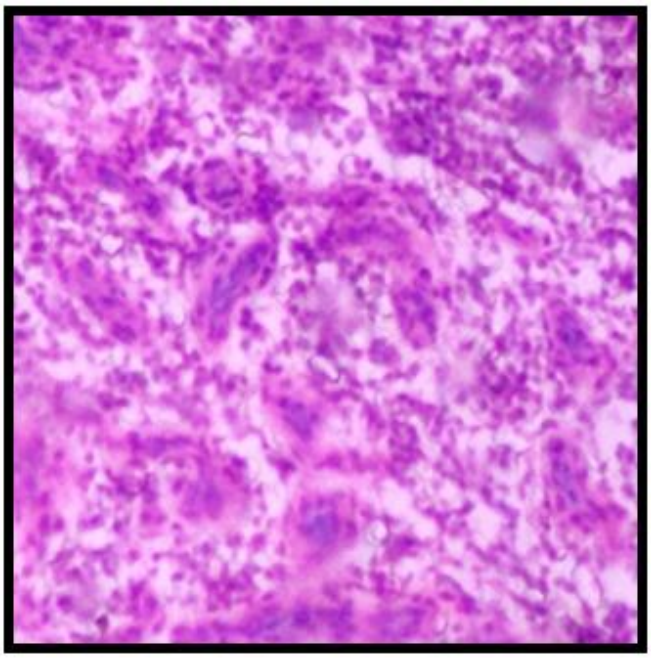


Figure 5

Peripheral giant cell granuloma showing multinucleated giant cells (H&E X 100)



DISCUSSION

LRLs are non neoplastic lesions caused by chronic local irritation. To the best of our knowledge, there are presently no large reviews on the prevalence and pattern of distribution of LRLs of the oral cavity in Nigeria. A previous study at our centre reviewed 38 cases of oral PG (5).In our study, LRLs constituted 14.2% of the total oral biopsies in our institution over a 21 year period. Other studies have also reported prevalence ranging from 6% to 48% (6-9).This variation in prevalence of LRLs could be due to lack of a standardized classification of reactive lesions and geographical differences in population of study.

The mean age of LRLs in our study was 35.7 years which was very close to 39.6 years reported by Naderiet al. (10) and 38.8 years by Amirchaghmaghi et al. (11) but was in contrast to Awange et al. (7) and Reddy et al. (9) who reported a mean age of 30.5 years and 31.56 years respectively in their studies. However, this study reported a peak incidence in the fourth decade of life which was in agreement with most studies(6-9, 11).

LRLs were more frequent in females in our study. This is consistent with findings from various studies around the world (7-9, 11)but different from the study by Naderi et al.who reported a male preponderance amongst Iranians. This difference may be attributed to ethnic differences in these studies (10).

In this study, the gingiva was the most common site of LRLs with 76.4% of cases which was similar to findings in other studies (6, 7, 9, 10, 12, 13). The predominance of gingival lesions can be attributed to the susceptibility of the interdental space to the accumulation of bacterial plaque and food debris especially in patients with periodontal pockets. This exposes the well vascularised gingivae to chronic irritation (1, 2) while the presence of periodontal ligament and periosteum near the gingivae may further support the predominance of gingival lesions since most of these lesions are believed to arise from these structures (7). The incisor-canine segments of the gingivae were the most affected gingival sites in this study with 69.7% which was in line with previous studies (7, 8, 14). The reason for this may not be unconnected with the proximity of the openings of the Wharton’s and Bartholin’s ducts to the lingual surfaces of the lower incisors (7). This increases the ease of deposition of salivary proteins on these teeth leading to the formation of acquired pellicle which initiates the first step in the multistage process of plaque formation. Dental plaque is a known and important chronic irritant of oral soft tissues (15, 16).

In our study, the most common histological subtype of LRLs of the oral cavity was pyogenic granuloma (PG) (49.2%)

which is in agreement with Kashyap et al. (8). However, Amirchaghmaghi et al. (11)and Seyedmajidi et al. (13) reported traumatic fibroma/irritation fibroma as the most common histologic subtype while Awange et al. (7) reported fibrous epulis (FE) and Naderi et al. (10) reported peripheral giant cell granuloma (PGCG) as the most common LRLs in their studies. All histopathological subtypes of LRLs were more frequently diagnosed in females in most studies including the present one (6, 7, 8, 13) but Naderi et al. in their study, differed. They reported a male preponderance in all the histologic types (10).

Majority of the PG in the present study were diagnosed in children and young adults, particularly in the second decade of life as observed by Hashemi Pour et al. (17). Also, this study is in agreement with several others that reported a predilection of PG for the gingivae and for the female gender (6-8, 13, 14). The predilection of PG for the female gender observed in this study and others has been speculated to be due to female hormonal influences (2).The gingivae is considered as another "target organ" for direct action of estrogen and progesterone as evidenced by immunohistochemical studies that have demonstrated hormonal receptors in PG (18, 19).

Fibrous epulis (FE) was the most prevalent histologic type of LRLs after PG and it constituted 17.5% of the cases which was in contrast with Awange et al. who reported FE as the predominant histologic type constituting 38.7% (7). The prevalence of pregnancy epulis (PE) was 1.2% which was similar to 1.5% reported by Hashemi Pour et al. (17) but in contrast to 3.0% reported by Awange et al. (7). The third decade was the peak age of occurrence for PE in these studies (7, 17) unlike the present study which reported a peak occurrence in the 4th decade. The terms "pregnancy tumor" and "granuloma gravidarum" are often used to describe the occurrence of PG during pregnancy. Such lesions frequently begin to develop in first trimester and their incidence increases unto the 7th month of pregnancy. The cause for the PG in pregnancy is the raised levels of progesterone and estrogen. This lesion usually regress post parturition (20). The effects of estrogen on periodontal tissues include reduction of keratinization, proliferation of gingival fibroblasts and increased gingival inflammation in the presence of minimal plaque accumulation, while progesterone increases vascular dilatation, thus increasing permeability of periodontal tissues (21).

Peripheral ossifying fibroma (POF) and peripheral giant cell granuloma (PGCG) showed no consistent pattern when compared with other studies. At present, the origin and pathogenesis of POF is unknown. However, due to its similarity to PG, it has been considered to be as a result of maturation of a long-standing PG (22). The osteoblasts and cementoblast responsible for laying down the matrix of the mineralized portion in POF have been speculated to originate from cells of periosteum or periodontal ligament (2) while there is immunohistochemical evidence that the proliferating cells are myofibroblastic in nature (23). Similarly, PGCG is believed to originate from the periodontal ligament or periosteum. Immunohistochemical analysis suggests that multinucleated giant cells seen in this lesion are of monocyte/macrophages lineage at various differentiation stages (24).

The prevalence of POF in this study was 1.6% which was similar to the finding of Awangeet al. (7) but in contrast to other studies (6, 8, 11, 14), while the prevalence of PGCG in our study was 3.7% which was similar to 3.2% obtained by Effiom et al. in their study (14) but was lower than what was obtained in other studies (6, 8, 11).

There exist a significant overlap of the histopathological types of LRLs of the oral cavity (2) and many authors have suggested that the predominance of the gingivae in most studies is an indication that LRLs are the same lesion at different stages. However, the mean ages of the different types of LRLs in this study did not support a progression in the disease process, in line with previous studies (8, 14).

The recurrence rate seen in this study was low (3.7%) and all occurred in the gingivae which is similar to findings by Awange et al. (7). All the recurrences in this study occurred in female patients at varying periods post excision. This low rate of recurrence has been speculated to either be due to effective management or lack of a follow up (7). However, this suggestion seem more likely because they would likely present if lesion recurs.

CONCLUSION

In summary, PG was the most common LRL seen in this study with the gingivae as the most affected site. These findings in addition to the female preponderance of all histological subtypes of LRLs were consistent with findings from different parts of the world.

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Author Information

Akindayo O. Akinyamoju, BDS, FWACS
Department of Oral Pathology, Faculty of Dentistry, College of Medicine, University of Ibadan
Ibadan, Nigeria

Bukola F. Adeyemi, BDS, FWACS, MSc.
Department of Oral Pathology, Faculty of Dentistry, College of Medicine, University of Ibadan
Ibadan, Nigeria

Bamidele Kolude, BDS, FWACS, MSc.
Department of Oral Pathology, Faculty of Dentistry, College of Medicine, University of Ibadan
Ibadan, Nigeria