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A study of the communication between dentists and laboratory technicians at an institutional

[1]Dr. Shakir Alam, Post Graduate student, Department of Oral Pathology & Microbiology, Bareilly International University, Institute of Dental Sciences, Bareilly (U.P.)

[2]Dr. Gaurav Sapra, Professor, Department of Oral Pathology & Microbiology, Bareilly International University, Institute of Dental Sciences, Bareilly (U.P.)

[3]Dr. Suprava Patel, Post Graduate Student, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India.

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Corresponding Author: Dr. Suprava Patel, Post Graduate Student, All India Institute of Medical Sciences, Raipur, Chhattisgarh, India.

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Abstract

Background

Focal reactive over growths are one of the foremost numerous benign soft tissue growths in the oral cavity. Chronic irritation or trauma is over and over again identified as the causative aspect. It has predilection for females older than 30 years, develop up to few centimetres in diameter, pedunculated or sessile and may arise on the gingiva or buccal mucosa. Treatment involves surgical excision and recurrences are infrequent. Aim: To assess the prevalence of focal reactive over growths of oral mucosa in an institutional setup. Material and Methods: All the histologically diagnosed cases of focal reactive over growths throughout the period of 10 years (Jan 2008-Dec 2017) were retrieved from the archives of Department of Oral Pathology. The information like age, sex, site, side and its prevalence were recorded. Results: A total of 2849 cases all through the period of ten years were identified, of which 449 (15%) were found to be focal reactive over growths. Most prevalent lesion amid them was focal fibrous hyperplasia 277 (62%), followed by pyogenic granuloma 92 (20%), while the least common was giant cell fibroma with 2 (0.5%) cases. All the focal reactive over growths were distributed among 21-40 years of age showing female predominance. The commonly affected site was right buccal mucosa. Conclusion: The key findings in this study are mostly comparable to the results of earlier studies, with differences pragmatic in a few cases. Nevertheless, information of the frequency and distribution of these lesions is favorable when establishing a diagnosis and treatment plan in clinical practice.

Keywords

Fibroma, Pyogenic Granuloma, Tumor, Lobular capillary haemangioma, Hyperplasia, Oral Mucosa.

Introduction

Oral mucosa is subjected persistently to external and internal stimuli that can lead to development of the lesions known as focal reactive over growths (FROG). In general they occur in reaction to low grade chronic irritation caused by dental plaque, calculus, food lodgement, faulty restoration, chronic biting habits, sharp edges of ill-fitting dental/oral appliances or grossly carious teeth[1]. They manifest as a group of disease conditions which includes focal fibrous hyperplasia (FFH), peripheral ossifying fibroma (POF), fibro-epithelial hyperplasia/polyp, peripheral giant cell granuloma (PGCG), pyogenic granuloma (PG), giant cell fibroma (GCF) and inflammatory gingival hyperplasia[2]. These proliferations clinically manifest as painless swellings with pedunculated or sessile base that contrast in colour from light pink to red. The surface appearance may be smooth, uneven, or ulcerated. They usually have a rapid onset and may increase and decrease in size and later eventually regress to some extent. Histologically these reactive proliferations are fibrous tissues with a range of components such as multinucleated giant cells, calcified material, or small vessels hyperplasia[3]. Surgical excision along with removal of causative irritants remains the treatment of choice. The severities of lesion may help to determine the coverage of incision including
its depth, as some of these lesions have affinity to recurrence[4].

Eversole and Rovin hypothesized to facilitate the different histological entities of inflammatory hyperplasia may possibly be due to connective tissue response to diverse intensities of mucosal irritation. This response may be influenced by the serum levels of certain endocrine hormones[5].

These lesions are composed of one or more of the following connective tissue components: collagen, bone, endothelial cells, and multinucleated giant cells. The differentional diagnoses of focal reactive over growths are not easy due to their similarity in clinical appearance to that of neoplastic proliferation[3].

However, knowledge about the distribution of these lesions is very essential for prompt diagnosis and early intervention. Still there is scarcity of recent data regarding changing trends in distribution of these lesions. Hence, this study intends to evaluate and inter-compare the relative frequencies and the clinical aspects of oral mucosal focal reactive over growths in an institutional setup.

Materials & Methods

A retrospective cross-sectional study was conducted on the hematoxylin and eosin stained formalin fixed paraffin embedded tissue sections of focal reactive overgrowth retrieved from the archives of the Department of Oral and Maxillofacial Pathology, Institute of Dental Sciences, Bareilly, available from Jan 2008 to Dec 2017.

All the microscopic sections were examined by two pathologists. Most of the lesion could be readily classified into FFH, POF, PG, PGCG & GCF. However some cases were intermediate between FFH & PG, then they were categorized as PG if the endothelial and inflammatory component were prominent and FFH if the collagenous component was dominant. Cases of epulis fissuratum (denture-induced fibrous hyperplasia) were excluded from the study.

Clinical Information relating to the type of lesion, age, gender, site and anatomical side was obtained from the submitted biopsy request forms and recorded and tabulated on customizes data forms for all the lesions. Cases with incomplete data were revaluated for the missing information. The significance of difference was assessed using the chi-square and Fisher's exact test. Probability of less than 0.05 was considered significant.

Data was analyzed using statistical package for the social sciences (SPSS, Chicago) statistical software (version 18).

Results

A total of 2849 cases during the period of ten years were retrieved, of which 449 (16%) were found to be FROG. Most prevalent lesion among them was FFH i.e., 277 (62%) followed by PG i.e., 92 (20%), while the least common was GCF i.e., 2 (0.5%) cases. (Table 1) They were mostly distributed among 21-40 years of age which showed a statistically significant difference. (Table 2) They showed a female predominance except in giant cell fibroma (Table 3) with gingiva being the frequently affected site. (Table 4) On the whole right side was the most commonly affected side. (Table 5)

Discussion

Focal reactive overgrowths are common lesion occuring in the oral cavity due to the increased frequency at which the tissues are injured. The literature when reviewed showed reactive lesions occuring in various incidences (Table 6). Chronic trauma can bring about inflammation leading to granulation tissue with endothelial cell proliferation, chronic inflammatory cells and soon after fibroblasts proliferate and noticeable as an overgrowth called reactive hyperplasia[6]. Irritation fibroma, oral leukoplakia and OSCCs mostly showed increased expression of MMP-2 and MMP-9 in the epithelium and connective tissue compared with normal mucosa. There was a significant difference in the epithelial expression of MMP-2 and MMP-9 between irritation fibroma and oral leukoplakia[7].

In the present study, focal fibrous hyperplasia was the most common lesion encountered when compared to all the other reactive overgrowths of oral cavity and similar results has been recorded by Kfir et al.,[8] Buchner et al.,[9] Reddy V, et al.,[6] and Kadeh et al[10]. Histologically, it shows hyperplastic fibrous tissue with varying degree of collagenization[11]. Some time clinically as gingival overgrowth secondary to orthodontic treatment which are paler in color with bulky gingiva in compare to inflammatory induced which are red and flimsy outgrowth[12]. Mucoperiosteal raised flaps help to excise lesion satisfactorily followed by debridement and curettage of underlying bone and adjacent tooth root surface[13].

In the present study, PG was the second most common lesion encountered after FFH which was in accordance with the study by Peralles et al[14]. Contrastingly, Stablein et al.,[15] Zarei et al.,[16] Effiom et al.,[4] and Kashyap et al.,[11] concluded PG as the first most common lesion followed by FFH. Pyogenic granuloma comprise a variety of terminology such as benign vascular tumor, pregnancy tumor and vascular epulis[17].

The major etiological factors are the occurrence of plaque, calculus and pregnancy[18]. Recently, it is also known as lobular capillary hemangioma due to the existence of well-circumscribed and discrete lobular arrangement, with central large vessels and peripheral aggregates of well formed capillaries. These make tissues of gingiva further vulnerable to chronic inflammation secondary to plaque and calculus[19]. If left untreated, over time it undergoes fibrous maturation with ossification and develops into POF[8]. The hemorrhagic nature of the lesion poses obscurity during treatment; consequently, laser is recommended above scalpel resulting in less significant recurrence rates. The higher recurrence rate is contributed by poor oral hygiene, hormones, deep seated lesions and existence of local irritants. Excision of PG for the period of pregnancy is indicate in the 1st trimester and must be avoided in other two trimesters unless it causes purposeful destruction[20].

In the present study, POF was the third most common FROG encountered. Parallel studies done by Zarei et al.,[16]

and Kadeh at al.,[10] showed that POF was the least common lesion noted. The POF initiates from the undifferentiated mesenchymal cells of PDL and allied causative agents are local irritants. The existence of oxytalan fibers within POF supports its source from PDL[20]. Clinically, POF presents as sessile or pedunculated mass with discrepancy in the color ranging from erythematous to usual pink. A certain diagnosis of POF is made by histopathology, comprises of atrophic epithelium and dense connective tissue stroma with fibroblastic proliferation and least vascular formation. Concentrated chronic inflammatory cell infiltrates through foci of cementum / dystrophic calcifications are apparent[11].

In the present study, PGCG was the least frequently encountered FROG after GCF. Similarly Kfir et al.,[8] Stabelein et al.,[15] Buchner et al.,[9] Effiom et al.,[4] Reddy et al.,[6] and Kashyap et al.,[11] also reported the same. Contrastingly, Naderi et al.,[3] showed it as the most frequently arising lesion. PGCG is known to occur from the cells of periodontal ligament or periosteum of bone. The precise etiology is unidentified. Probable factors well thought-out are chronic irritation, tooth extractions, xerostomia and hormones[21]. Definite parameters regarding this lesion such as its etiology, recurrent nature, proliferative potential and derivative roots of multinucleated giant cells and mononuclear stromal cells remain incomprehensible[22]. Cells of stroma are well thought-out to be the proliferative section and are associated to the clinical behavior of lesion[23]. PGCG consists of abundant multinucleated giant cell and fibrocellular stroma. The source of giant cell is notorious and predictable to be originated from phagocytosis, osteoclasts, foreign body and endothelial blood cells. CD68 immunohistochemical positivity suggests the multinucleated giant cells (MNG) cells are derived from monocyte/macrophage lineage[24]. The management comprises of elimination and inhibition of essential etiological factors with abolition of the whole base of the lesion[20].

GCF was the least commonly encountered lesion in the present study and it occurs in the age group between 21 and 60 years. Contrastingly, this lesion was not reported with any of the other parallel study. The GCF was earliest known as entity between fibrous hyperplastic soft tissue lesions by Weathers and Callihan in 1974[25]. It was named for its multinucleated giant cells, which are usually large, stellate shaped with mono/multi nuclear fibroblasts[26]. According to Sabarinath et al.,[25] it ranges between 4 - 17mm in maximum dimension and predominance in the patients among 6 - 67 years of age. These giant cells were most numerous in the connective tissue beneath the epithelium[2].

Conclusion

The present study indicates some differences in the age, gender and site distribution among the reactive hyperplastic lesions. Though these lesions can be differentiated based on the clinical and histological appearance, yet these are the variations of a single entity which may be influenced by the irritant, duration of the lesion or possible hormonal changes. Proper diagnosis, prevention and treatment of these lesions are of utmost important due to the occurrence and similar presentations of neoplastic growths though the incidence is rare. Hence, close postoperative follow-up is required as some of the lesions may exhibit recurrence.

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