



A clinicopathological study of Pyogenic Granuloma

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Abstract

The aim of study: this study was done to assess the clinicopathological features including gender, age, and clinical variations of Twenty Two diagnosed oral pyogenic granuloma in Iraqi patients attended Al Hussein Teaching Medical Center, Karbala city

Materials and Methods: A retrospective study for the twenty two cases (22) diagnosed as Pyogenic Granuloma was achieved, the submitted biopsies during a 3 years period from January 2018 to March 2021 at Al Hussein Teaching Medical Center, Karbala Health Office, Iraqi Ministry of Health. Data for the following parameters were reported gender, age, site, and clinical presentation (size, base attachment, surface and color).

Results: The results showed Pyogenic granuloma (PG) as a tumor like (non-neoplastic) soft tissue lesion had female predilection (with obvious differences found in the distribution among age groups as age group 20-29 in males showed (18.75%) and 40-49 age group in females with (17.9%) with tendency to highly expressed in the gingiva 77.3% and could affect extra oral sites like skin at lesser extent (4.55%). The maximum diameter of PG were ranged from 0.2-3 cm; The majority of cases presented as sessile lesion clinically (81.8%) and less cases recorded as pedunculated lesion (18.2%).

Conclusion: Although this benign lesion is commonly encountered during dental treatment could appear with wide range of variations clinically, in our study PG showed female predilection and this well explained the nature of lesion which has hormonal relation

Keywords: Pyogenic Granuloma PG.

Introduction

Pyogenic granuloma PG is a tumor like soft tissue lesion formed as a result of exaggerated reaction of localized tissue to inflammatory reaction [1] or to a minor injury and/or other irritation as nonspecific infection, considered as main cause of PG, poor oral hygiene, over hanging restoration

and cheek biting or retained roots as chronic irritation [2] .

In addition to hormonal changes during puberty and pregnancy [3] when PG ensues and in oral mucosa in the setting of pregnancy the most common site is on the

gingiva and it's called granuloma of pregnancy, or granuloma gravidarum, or epulis gravidarum this usually occur in the 2nd or 3rd trimester of pregnancy as the level of sex hormones estrogen and progesterone are markedly increased which straggle preminent effect on the endothelium of oral pyogenic granuloma [4]

The most affected sites by PG is the gingiva, in frequently are lip, tongue and oral buccal mucosa [5]

Resultantly of the irritation , there is increasing tendency of granulation tissue proliferation does not contain pus material and not arise as consequence of granulomatous inflammation thus the term pyogenic granuloma is misnomer and not represent granuloma in histological sections [6]

Intraorally PG exist with wide band of gross appearance , ranging from sessile plaque to elevated mass , Which are very friable , painless, The color show wide range of variability from deep red , reddish – purple to pink depending on vascularity of growth in relation to its clinical course [7] . Parajuli et al [8] stated this lesion present

MATERIALS AND METHODS

A retrospective study for the twenty two cases reported as Pyogenic Granuloma carried through which submitted biopsy during a period from January 2018 to March 2021 at Al Hussein Teaching Medical Center, Karbala Health Office, Iraqi Ministry of Health. Data for the following parameters were reported gender, age, site, clinical presentation (size, base attachment,

RESULTS

clinically as exophytic growth with smooth but sometimes undergoes ulceration; they will appear as small erythematous papules on a pedunculated or sessile base. The growth rate of PG is slow taking from few weeks to months to reach their optimal size ranging from few millimeters to several centimeters but seldom exceed 2.5 CM [9]. This painless masses may sometimes show alarming rapid growth these benign lesions commonly present in anterior region of maxilla particularly on the facial aspect of gingiva [10].

Treatment of PG depend on surgical excision with removal of irritant factors unless the excisional treatment would produce a marked deformity in such case the recommended treatment is incisional biopsy and associated with recurrence rates ranged from 0-16 percent [11,12].

Histologically PGs are classified as the LCH (lobular capillary hemangioma) which has proliferating blood vessels organized in lobular aggregate on edema, capillary dilation or inflammatory granulation and the other type is non LCH [13].

surface and color), and histological presentation

SPSS software version 24 was used to analyze the data to determine association between Pyogenic Granuloma and different variables Chi-square test. Non-significant (NS) $P > 0.05$, Significant (S) if $P < 0.05$, highly significant (HS) $P < 0.001$

A total of twenty two cases diagnosed with PGs, Females show a distinct predominance with high significant difference found between females and males samples No. of female 14; male 8, the mean of age of the diagnosed patients was 34.58 with an age range from 17-72 years as seen in Table 1, fig 1. The high frequency cases were seen in age group 20-29 in males (18.75%) and in 40-49 age group in females (17.9%) as seen in (Table (1), Fig.1). The most affected clinical site was the gingiva that show high percentage (77.3%); tongue and lip were equal percentage 9.09% in comparison to the least affected extra oral site by the nonmalignant lesion was skin (4.55%) Fig.2 [A], The maximum diameter of PG were ranged from 0.2-3 cm, High percentage (59.1%) with lesion size more than 1 cm and (40.9%) were less than 1cm Fig.2 [B]. The majority of cases presented as sessile lesion clinically represent high percentage (81.8%) and less cases recorded as pedunculated lesion (18.2%) Fig.2 [C], these oral lesions

were developed with smooth surfaces 59.1% the rest had ulcerated surfaces 36.4% while the less commonly polypoid 4.55%, High percentage (68.2%) Fig.2 [D] represent the white color of lesion while the red/brown lesion percentage was (31.8%) Fig.2 [E].

On histopathological examination the reports showed that PGs sections showed highly vascular chronically inflamed connective tissue stroma, hemorrhage and presence of extravasated erythrocyte in 36.4% of total cases Fig. 3 (A) and the others showed fibrous connective tissue stroma with minimal inflammatory cell infiltration with non extravasated RBCs in 63.6% (high percentage) Fig.2[F] and Fig 3 (B, D).

In our study highly significant differences (HS) found between the sample groups including the different clinical features (site, size, basement membrane, surface, and color) by using chi_ square when comparing with each other (Table 2).

Conflicts of Interest

The authors reported that they have no conflicts of interest.

DISCUSSION

Oral pyogenic granuloma as a non-neoplastic lesion can occur in any age from children to an elderly people. Our study showed that the mean of age of diagnosed cases was 34.58% with females predilection and the most affected age group was in the 4th decade of life 40-49 showed the highest percentage (17.9%) might to the effect of hormones or contraceptive on the vasculature [10]; However there is analyze stated PGs more frequently occurred in

females in 2nd decade of their life as the level of circulating female sex hormones estrogen and progesterone will elevate; this coincide with our result that the second female age group showed high frequency was 20-29 (14.3%) in accordance with [14,16&16]. As the subclinical hormones alterations during puberty and pregnancy may influence the local factors as bacterial plaque and gingival inflammation to start exaggerated vascular hyperplastic tissue and

worsen the established gingivitis which increase bleeding tendency and cause functional interference (especially mastication) ; this occur by increasing dilation, angiogenesis, releasing vasoactive mediators and accelerated by expression of angiogenic factors as basic fibroblast growth factor (FGF) and vascular endothelial growth factor (VEGF) that enhanced by female sex hormones and trauma [17, 18]. According to these causes the recurrence of PGs is common, the treatment can be completed in 2nd trimester of pregnancy with follow up of case but the recommended treatment should be performed after parturition [19].

On other hand when the cases of PGs examined clinically the most cases of pyogenic granuloma affected the gingiva 77.3% followed by lip and tongue 9.09% similar to Newadkar and Khairnar [20], the

Conclusion

We presented this work which carried out on reports with diagnosed Pyogenic granuloma to evaluate the clinicopathological characteristics and to determine its relation to age, gender clinical site, size, surface, basement membrane and color ,In summary we found that PG as benign lesions showed wide range of clinical features which can appear at any age, the most of diagnosed patients were females who have high predilection and this well explain the nature

size ranged from 0.2 to 3cm in diameter the smaller one indicate slow rate of development whereas the larger one took longer time [21] while other studies stated rapid growth rate [22].

Most cases presented clinically with smooth surface attached at a sessile bases this result is in accordance with [23], In our study we found 15 of total 22 diagnosed PGs were white in color as they were mature, less vasculature and contain more collagen the rest of lesions were varies from red to brown in color depending on vascularity of growth [24]; in accordance with [20]. On other hand the overlying stratified squamous epithelium Fig3 (c) was either atrophic, hyperplastic or ulcerated, In accordance with Rekha et al, [25]

of lesion which has hormonal cause. Histopathological features varies from highly vascular stroma showed extravasated RBCs with chronic inflammatory infiltration to less vascularized connective tissue had Non extravasated RBCs with minimal inflammation which could suggest healing phase of these lesions.

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Table (1): Distribution of Pyogenic granuloma cases according to age groups between males & females. High female predominance, female age group high percentage 40-49 show high percentage (17.9) , male age group 20-29 show high percentage (18.75).

Age group	Male	Percentage from males	Female	Percentage from females
	No.	%	No.	%
0-19	1	6.25	1	3.57
20-29	3	18.75	4	14.3
30-39	1	6.25	2	7.14
40-49	1	6.25	5	17.9
50-59	1	6.25	2	7.14
60-69	1	6.25		0
Total	8	50	14	50

Table (2): highly significant differences (HS) found between the sample groups including the clinicopathological features (site, size, basement membrane, surface, color and the presence of extravasated RBCs) by using chi_ square when comparing the variable with each other.

Clinical feature	Variables	No.	% from total No. of cases	p-value
Site	The gingiva	17	77.3	Chi-square=66.1 P<0.001 HS
	Lip	1	4.55	
	Tongue	2	9.09	
	skin	2	9.09	
Size (CM)	>1	13	(59.1)	Chi-square=22.0 P<0.001 HS
	<1	9	40.9	
Basement membrane	Sessile	18	81.8	Chi-square=21.1 P<0.001 HS
	Pedunculated	4	18.2	
Surface	Smooth	13	59.1	Chi-square=44.1 P<0.001 HS
	Ulcerated	8	36.4	
	polypoid	1	4.55	
Color	White	15	68.2	Chi-square=17.6 P<0.001 HS
	Red/ Brown	7	31.8	
RBCs	Extravasated	8	36.4	Chi-square=28.8 P<0.001 HS
	Non extravasated	14	63.6	

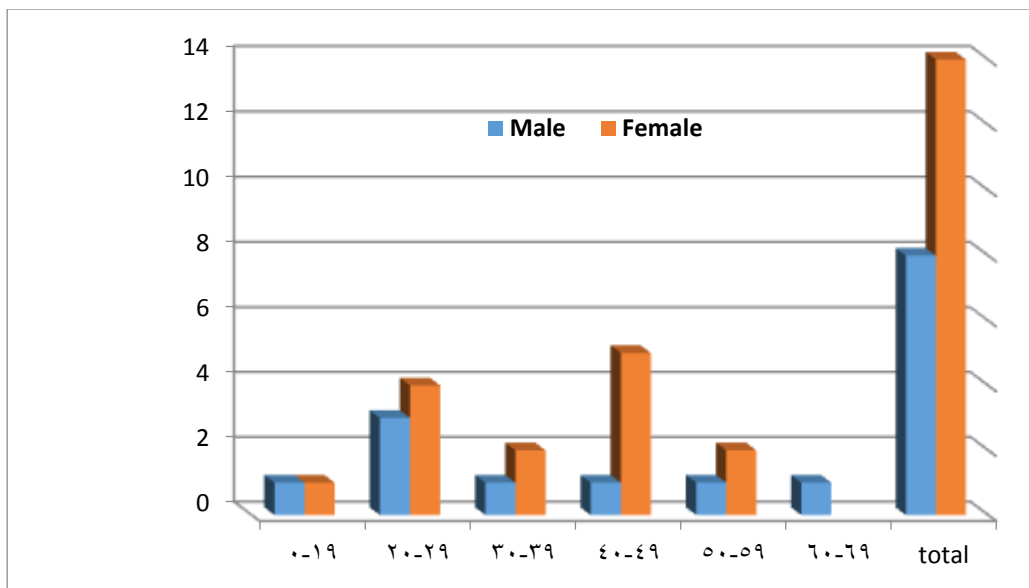
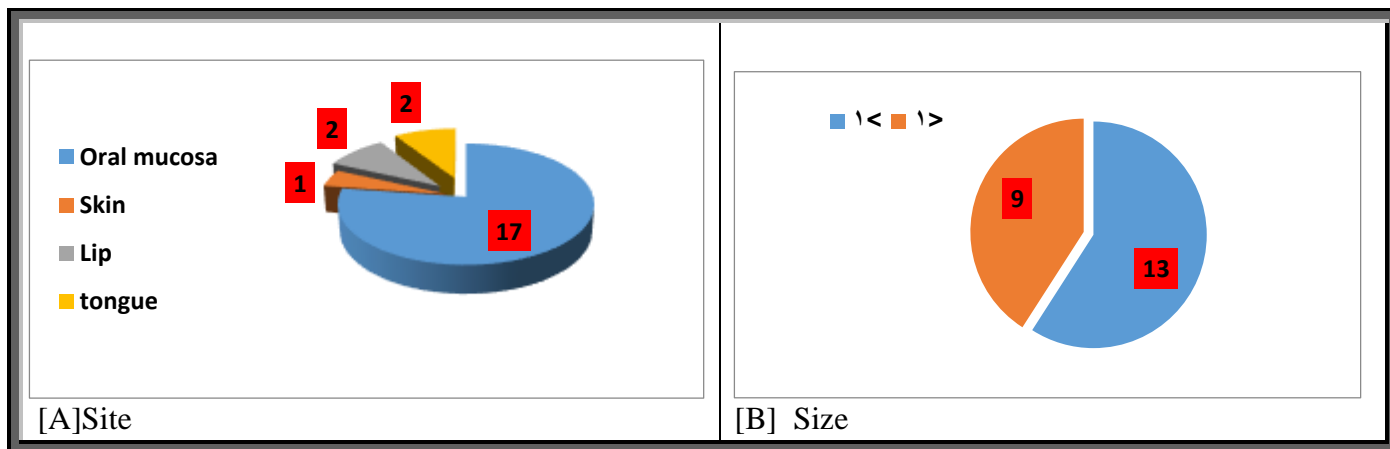


Figure 1 (Fig.1): Distribution of PGs among different male and female age group



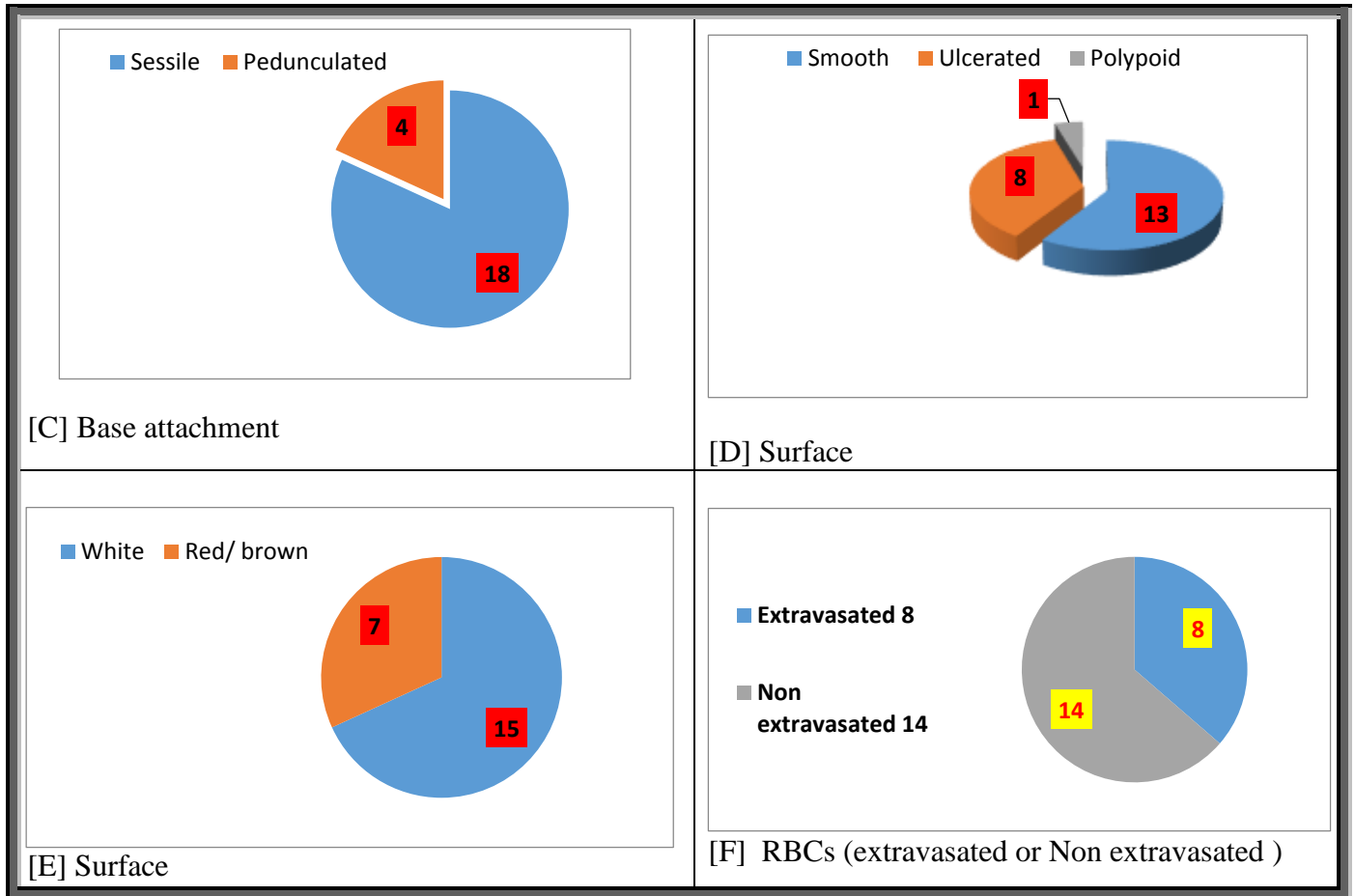
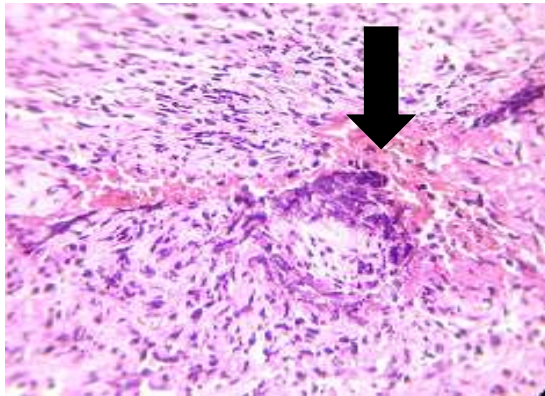
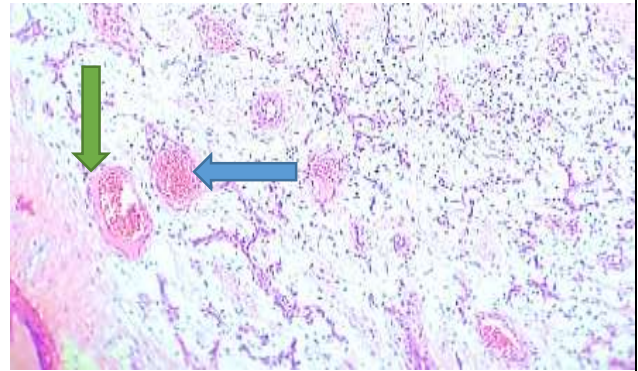


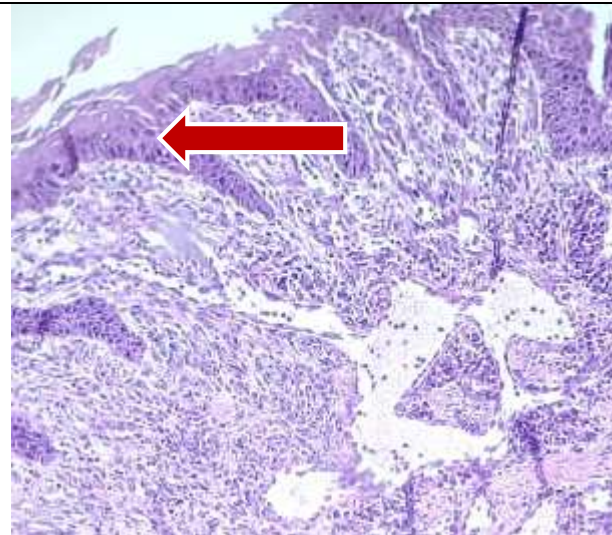
Figure2 (Fig 2): Show different studied clinical features of Pyogenic Granuloma lesions.



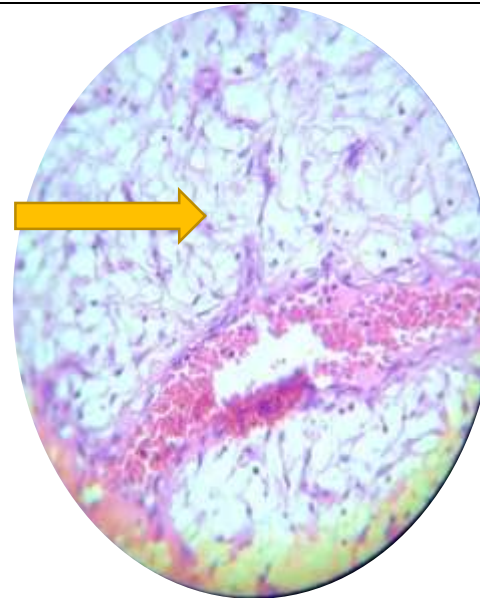
A. Histopathological section X40 show extravasated RBCs (black arrow).



B. X 40 Histopathological finding of PG present Endothelial lining (green arrow), Non extravasated RBCs with congested blood vessel (blue arrow).



C. Histopathological section at magnification power X 10 show epithelial lining.



D. Histopathological section X 40 show Granulation tissue (yellow arrow)

Figure3 (Fig. 3): Variant Histopathological features of Pyogenic Granuloma