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Prevalence of pregnancy related oral granuloma in a Nigerian Population group and the possible role of contraceptives

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Summary

A clinicopathological survey on pregnancy related tumours was carried out on 400 randomly selected pregnant Nigerian women. Fifteen (15) cases of pregnancy granuloma or 'epulis gravidarum' were found. Of these subjects, 287 representing 71.8 percent were on birth control before conception, while 113 or 28.2 percent were not. Nine (9) cases of pregnancy tumour were found in the group on birth control pills and six (6) in the group not on birth control representing an incidence of 3.1 and 5.3 percent respectively. Literature review indicate a general incidence of between 0-2.5 percent. Five of the granuloma regressed post partum, while ten were excised. Patients were followed 1-2 years post partum and no recurrence was recorded, even in patients who have re-commenced on contraceptives.

Keywords: Prevalence, pregnancy granuloma, Nigerian, contraceptives

Résumé

La surveillance clinicopathologique des tumeurs liées à la grossesse était évaluée sur 400 femmes enceintes nigériennes choisies au hasard. Quinze (15) cas de granulome étaient enregistrés en grossesse. Des 287 sujets représentant 71.8% étaient sous contrôle de naissance avant la conception, alors que 113 ou 28.3% n'étaient pas. Neuf (9) cas de tumeurs de grossesse étaient trouvés dans le groupe de naissance contrôlée à l'aide des pilules et six (6) dans le groupe sans contrôle représentant une incidence de 3.1 et 5.3 pour cent respectivement. Des revues littéraires indiquent une incidence générale de 0-2.5 pour cent. Cinq cas de granulome régresaient après l'accouchement alors que 10 cas étaient incisés. Les patients étaient suivis pour 1-2 ans après l'accouchement et il n'y avait pas de récurrence même aux patients qui ont recommencé l'emploi des contraceptives.

Introduction

Oral pyogenic granuloma is a highly vascular variant of the oral soft tissue proliferative lesions. It could be rapidly or slowly growing. It is pedunculated and fiery red in colour [1,2]. The lesion occurs predominantly in the gingiva, but other intra-oral sites can be involved. Whenever the lesion occurs in pregnancy it is called 'pregnancy tumour' 'epulis gravidarum' or pregnancy granuloma. The last term is preferred since the histological appearance is similar to the pyogenic granuloma.

The aetiology is largely unknown, although trauma, poor oral hygiene and altered sex hormone levels have been suggested to be important factors [3,4]. Prevalence figures ranging from 0-2.5 percent have been reported for pregnant caucasian women [5]. The lesion has also been associated with use of oral contraceptives [5]. Even though the lesion is not considered rare, there have been very few reports in the literature on the incidence of

this lesion among black populations. We are not aware of any previous report in Black African women. The objectives of this study therefore was to document the incidence of pregnancy granuloma in the Nigerian pregnant population and to highlight its clinical presentation, and the possible role of oral contraceptives in its pathophysiology.

Subjects and methods

The present study deals with 400 cases of Nigerian women screened at various stages of pregnancy for possible gingival reaction and or lesion. The screening which was based at the antenatal clinic of the Obstetric and Gynaecology department of the hospital was carried out by one of the authors JOL, assisted by a resident on rotation at the oral diagnosis unit of the University College Hospital (UCH) Ibadan Oral Pathology department. Patients were randomly selected using the following criteria;

1. Patients without record indicating continuous attendance were excluded.
2. Patients without record indicating last menstrual period were excluded.
3. All cases in which age can not be ascertained were excluded.

Information on age, pregnancy status, duration of symptom, dental conditions, oral hygiene, gingiva and periodontal conditions and anatomical site of lesions and size were collected from patients and entered in a form designed for the study through oral examination.

Screening was carried out for three weeks, and of the 408 patients screened, only 8 did not meet the criteria and were excluded. For the purpose of the study, information on history of past exposure and, period of exposure to contraceptive drugs ('pills') was obtained. Oral hygiene index was graded after Greese and Vermillion, 1964 [6], while Gingival Index was graded according to Loe and Silness 1963 [7]. Pregnancy status was graded T¹, T², T³ with T out with dental mirror, probe and wooden spatula under direct fluorescent light

Results

Table 1 shows the total number of patients on 'Pills' per age group and their percentages. Patients between ages 30-40 years had the highest number of 126/287 or 43.9%.

Table 1: Percentage distribution of patients on 'pills' per age group and No. of Lesions

Age group	Patients on 'Pills' Per age group	% Patient on Pills	No. of lesion per Age group
15-20	36	12.5	1
20-30	52	18.1	3
30-40	126	43.9	4
40-50	73	25.4	1
Total	287	100	9

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The lowest of 12.5% was recorded for age group 15-20. Sixty percent, 9/15 of the lesions were found in this group on 'pills.' Table 2. indicates the total number of patients not on 'pills' per age group and their percentages. Again age group 30-40 years constituted the highest with 47/113 or 41.6%. The percentage of pregnancy granuloma in this group was 40 or 6/15.

Table 2: Percentage distribution of patients not on 'pills' per age group and No. of Lesions

Age group	Patients not on 'Pills' per Age group	% Patient not on Pills	No. of lesion per Age group
15-20	14	12.4	-
20-30	39	34.5	1
30-40	47	41.6	3
40-50	13	11.5	2
Total	n=113	100	6

Table 3. shows analysis of the mean age of patients and their period of exposure to contraceptive drugs (pills). The highest period of exposure was found in the 30-40 year age group, ranging from between 10-26 months with a mean of 18 months, while the lowest period of exposure was found in the 15-20 years age group with a mean of 11 months. Table 4. shows the relationship between lesions and contraceptive therapy, along with the result of a chi-square statistical application.

Table 3: Distribution of patients per age group and (mean) period of exposure to 'Pills'

Age group	No. of patients per age group	Period of exposure to 'Pills' (months)	Mean
15-20	36	9-14	11.5
20-30	52	12-20	16.0
30-40	126	10-26	18.0
40-50	73	12-22	17.0
Total	n=287		15.6

Table 4: Statistical data on lesion and possible role of contraceptive

	No Contraceptives	Contraceptives	Total
No lesions	107	278	385
Lesions	6	9	15
	113	287	400

Chi-Square = 0.55 (P=0.46)

Table 5. shows the analysis of the fifteen cases of pregnancy granuloma, relating to age, site, size, oral hygiene index and pregnancy status. Numbers 1-9 represent patients on birth control 'pills', while 10-15 represents patients not on 'pills'. The average age of all patients was 29.8 years. Five of the le-

sions representing 33.3% regressed between three to six months post partum while the remaining 66.6% were excised. Two hundred and eighty seven were found to have been on oral contraceptive pills out of the hundred.

Discussion

It is not clear why there is an increase in the frequency with which pyogenic granuloma appears during pregnancy. However, it is an established fact that sex hormones have effect on the oral mucosa [1,7], a tissue that is similar to the vaginal and uterine cervix mucosa. The increased prevalence of pregnancy granuloma towards the end of pregnancy when levels of circulating estrogen are highest have been observed [5,7]. Our study is in agreement with this observation as 11/15 or 73.3% of our cases are in the third trimester. Most of the patient in this group first noticed gingival reaction around the second trimester, which continued to increase in size.

Local irritants, especially plaque have been implicated as a predisposing factor that can accentuate pyogenic granuloma of pregnancy and gingivitis [8,9]. This is supported by some studies that reported regression of these conditions post partum upon the institution of oral prophylaxis during and after pregnancy [9,10]. However, dependence of gingivitis on the amount of plaque accumulation in pregnancy has not been supported by studies on prevalence of gingivitis in pregnancy [5,11,12]. The studies show gingivitis to increase significantly during pregnancy without corresponding changes in the level of plaque with the inflammation subsiding post partum. Our observation in relation to gingivitis is consistent with this assertion as most of our patients (Table 5) had good/fair oral hygiene index but with bleeding gums on slight probing especially in the group on 'pills'. This is indicative of chronic inflammatory process, despite the absence of heavy plaque accumulation. It is worth mentioning however, that majority of our patients used tooth picks excessively, particularly in the area where the granuloma eventually developed.

As for the location of the lesions, most studies [8,9] reported a preference for the maxilla over the mandible, and the anterior region over the posterior. Our study shows some degree of departure from this observed clinical pattern of presentation. Forty seven percent (47%), 7/15 of the lesions were located in the posterior region, which is higher than the value of 30.0% reported by Mussalli *et al* [9] but lower than the 54% reported by Tillila [5]. Site incidence shows a preference for the maxilla at 11/15 or 73.3%, which is consistent with the value for most studies.

The role of hormonal contraceptive drugs in the incidence of pregnancy granuloma is not fully established. The general mean average for period of exposure to contraceptive drugs in our study was 15.6 months, with the highest mean period of 18 months recorded for the 30-40 year age group. This group also had the highest incidence of lesion (Table 1) with 4/9 or 44%. The relationship between contraceptive pills and incidence of pregnancy granuloma is inconclusive as (Table 2) also shows the highest incidence of lesion, 3/6 or 50% occurring in the same age group not on contraceptives. In a case presented by Lynn [13], a patient developed the lesion while taking 30mg of norethindrone daily, and the lesion regressed when she stopped. Flynn and associates [14], and other authors [15,16] also reported a similar observation. Our study is inconclusive as regards this observation. Three out of nine lesions in our study regressed post partum, representing 33.3% (Table 5) in the group

Table 5: 15 cases of pregnancy granuloma indicating sites, trimester period, age, size, gingival conditions and management.

	Age	Pregnancy Stage	Bleeding Gum Duration and Gingival Condition	Oral Hygiene	Site	Size	Management
1.	31	T ¹	B-12/12	A	2,3	0.5 x 1cm	Excised
2.	28	T ¹	A-6/12	O	1,2	0.5 x 0.5cm	Regressed Post Partum
3.	33	T ¹	A-4/12	A	4,5	1 x 1.5cm	Regressed Post Partum
4.	29	T ²	B-2/12	O	1,3	1 x 1cm	Excised
5.	27	T ¹	A-3/12	A	4,3	1.5 x 1.5cm	Excised
6.	31	T ¹	B-6/12	O	6,5	1.5 x 1.5cm	Excised
7.	25	T ¹	A-6/12	O	3,4	0.5 x 1cm	Regressed Post Partum
8.	34	T ¹	A-1/12	O	4,5	1 x 2cm	Excised
9.	37	T ¹	B-6/12	A	3,4	1 x 0.5cm	Excised
10.	32	T ¹	A-3/12	O	7,6	1 x 1cm	Excised
11.	26	T ¹	B-4/12	A	3,4	0.5 x 0.5cm	Regressed Post Partum
12.	26	T ¹	C-10/12	B	6,7	0.5 x 0.5cm	Excised
13.	38	T ¹	B-8/12	B	1,1	1 x 1cm	Excised
14.	25	T ²	B-7/12	A	4,5	0.5 x 0.5cm	Excised
15.	25	T ²	C-3/6/12	B	4,5	0.5 x 1cm	Regressed Post Partum
Mean	29.8 yrs.						

Gingival Condition (Score)

(O) - Normal gingiva

(1st) - Mild inflammation with no bleeding on probing.

(2nd) - Moderate inflammation with bleeding on probing

(3rd) - Severe inflammation with spontaneous bleeding on probing.

Oral Hygiene Score

(O) No stain or soft debris on tooth surface.

(A) Soft debris covering not more than 1/3 of tooth surface.

(B) Soft debris covering more than 1/3 but less than 2/3 of tooth surface.

(C) Soft debris covering more than 2/3 of tooth surface.

on birth control, while two out of six, again representing 33.3% regressed post partum in the group not on birth control drugs.

In conclusion, this study has demonstrated a prevalence value of (3.8%) for pregnancy tumor among blacks that is much higher than in person from other races. The main cause for this remain unclear. Statistical breakdown of our results on possible role of contraceptives (Table 4) suggests neither a significant role nor direct relationship between oral contraceptive and the development of a lesion. Chi-square = 0.55 ($P=0.46$). A case for further investigation into a possible 'catalytic' effect of poor oral hygiene in the pathophysiology of the lesion is recommended, as our patients not on birth control drug had a poorer oral hygiene index than those on drugs (Table 5).

Further studies will be required to fully establish the actual role or impact of oral health care and the incidence of pregnancy tumor in the population group. The present patients population are teaching hospital based, and patients in such tertiary level facility are known to vary in socio-economic status from patients in general hospitals. Oral hygiene index, dietary habits, and duration of contraceptive intake, if any, could be different among this group of patients most of whom in this part of the world are illiterates.

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