

Evaluation of the Oral Health Status and Needs For Periodontal Treatment in pregnant women.

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ABSTRACT

Statement of the problem: Some studies reveal that pregnancy can be considered to be a risk factor for Periodontal disease, due to increased levels of estrogens and progesterone. Propose of this study was to determine oral health changes during pregnancy, using the Community Periodontal Index for Treatment needs (CPITN).

Methods & Materials: This descriptive cross-sectional study was done on 95 pregnant women and 102 non-pregnant ones, matched in term of age, as control. The participants were examined, using CPITN probe, and the data were recorded in a standard questionnaire. The different codes of CPITN were determined according to the WHO recommendations. Furthermore, the incidence of inflammation, pocket and plaque index was assessed. All the data from two groups were compared statistically by Chi-Square test.

Results: Pregnant women exhibited more significant need for advanced periodontal treatment compared to non-pregnant ones (33.7% and 26.5% respectively. $P < 0.0001$). Seventy-three and half percent of control women demonstrated no need for periodontal treatment but 41.5% of pregnant women needed periodontal treatment 56.8% of pregnant women showed gingival inflammation but only 44.1% of controls exhibited this phenomenon. Furthermore, pregnant women exhibited signs of pocket formation more than controls (47.4% and 38.2%, respectively, $P < 0.05$)

Conclusion: Under the study limitations, during the pregnancy the susceptibility of the pregnant women to gingival inflammation and periodontal disease increase, and of course, significant increase in values of periodontal treatment may (CPTTN codes) is observed during gestation.

Keywords: Periodontal Index, CPITN, Pregnancy, Gingival inflammation.

INTRODUCTION

The relationship between the hormonal changes in women and periodontal nflammation has been known for many years Vermeeren, 1778, described "tooth pain" in pregnant women and Pitcarin in

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discussed gingival inflammation and enlargement during pregnancy. ^(1, 2) The case of pregnancy gingivitis was recorded by Pinard in 1877. ^(3, 4)

The occurrence of pregnancy gingivitis has been reported extremely common, occurring in 30% to 100% of all pregnant women. ^(5, 6) Erythema, edema, hyperplasia and increasing bleeding are the

manifestations of pregnancy gingivitis, the same as those for conventional gingivitis.⁽⁶⁾ There is a variation from mild to severe inflammation which can progress to serious enlargement, pain and spontaneous bleeding of gingiva. In some cases, a localized gingival enlargement, called pregnancy tumor, may be observed. Increasing tissue inflammation may cause periodontal pocket and tooth mobility.^(7,8) Hormonal levels increase during pregnancy. Estradiol level in plasma may increase up to 30 times as high as that during the reproductive cycle. The placenta has a main role to produce estrogens and progesterone during the pregnancy. Estrogen may regulate cellular proliferation, differentiation and keratinization. But progesterone affects the permeability of the microvasculature and also changes the production of the collagen.

On the other hand, the response of the tissue (gingival) to the local factors (plaque) may become exaggerated because of increasing sex hormones in gingival tissue, saliva or gingival crevicular fluid.⁽⁹⁻¹¹⁾ Our study tried to evaluate the Clinical gingival changes in pregnant women and compare it with non-pregnant ones. Furthermore, in this study, the needs of pregnant women for oral health care have been evaluated, too.

MATERIALS AND METHODS

Ninety five pregnant women, 15-45 years old, and at 24-28 wk of gestation who referred to Health center in Zanjan (north west of Iran), between December 2006 and

February 2008, were selected and participated in this descriptive cross-sectional study as case group. At the same time, one hundred and two non-pregnant women who referred to the same center just for check-up were selected as control group. Two groups were matched in term of age. History of any systemic disease (such as, hormonal and blood disorders, etc.) or taking any medicine that can influence periodontal status (corticosteroids, hormones, etc.) was considered as exclusion criteria. A standard questionnaire was designed and all the samples were explained about the research and informed consent was obtained from each patient just before they entered the study.

Community periodontal index of treatment needs (CPITN) designed and recommended by WHO and International Dental Federation (FDI), have been used for evaluating periodontal health and needs for treatment in this study.

The CPITN assesses the presence or absence of gingival bleeding on gentle probing, the presence or absence of supra-gingival or sub-gingival calculus and presence or absence of periodontal pockets, subdivided in to shallow and deep. A specially designed periodontal probe with 0.5mm ball tip and gradation corresponding to shallow and deep pockets, was applied to probe for bleeding and calculus and to determine pocket depth. Ten index teeth are examined, but only the worst finding from the index teeth is recorded per sextant of

teeth. In determining the treatment needs of individual patient, only the worst finding from all of the teeth in a sextant is recorded, resulting in six score. The CPITN criteria for determining periodontal status and the corresponding treatment needs were summarized in Table 1. ⁽¹²⁾

A trained dental student examined the participants using CPITN probe and recorded the data in a standard questionnaire. The different codes of CPITN were determined according to WHO recommendations regarding the maximum code observed. On the other hand, the incidence of inflammation, pocket and plaque index was assessed. The number and percentage of CPITN codes together with the related treatment needs were determined in two groups and compared statistically by Chi-Square test.

RESULTS

Case group was subdivided into three sub-groups based on age. Forty three participants (45%) were in 15-25 years old, forty three (45%) in 26-35 years old and nine participants (9%) in 36-45 years old. According to Chi-Square test, age could not be considered as an effective variant on CPITN. Based on the CPITN results, fifty four people (56%) of case group showed gingivitis and 41 (43%) did not exhibit any sign of inflammation. In control group, forty five cases (44%) had gingivitis but fifty seven (55%) showed no sign of this phenomena. According to Chi-Square test distribution of gingival inflammation

revealed a significant difference between two groups. ($P < 0.008$). (Table 2)

As, it appears in Table 3, forty five participants of case group (47%) had calculus, but fifty ones (52%) were not calculus positive. On the other hand, only thirty-nine people (38%) in control group had calculus and sixty three (61%) were calculus negative. There was a significant difference between two groups in calculus formation point of view ($P < 0.03$). According to the Silness-Loe plaque index, in case group, twenty (21%) of the participant showed no plaque (zero code), fifty ones (52%) score one, twenty two people (23%) score two and three ones (3%) score three. In control group the results of plaque index were as follow: twenty four cases (23%) without any plaque (zero code), fifty one (50%) score one, fifteen (14%) score two, twelve (11%) score three. Based on Chi-Square test, plaque index revealed significant difference between two groups. ($P < 0.03$). (Table 4)

Thirty-nine participants in case group (41%) showed code zero in regard of CPITN, six (6.3%) code two, eighteen people (18%) code three and thirty two (33%) code four, and there was no case for code one.

In control group the results of CPITN were as follow: seventy five (73%) code zero, twenty-seven (26%) code four and no one was assigned code one, two and three. (Table 5)

Statistical analysis of the data achieved by CPITN exhibited that thirty nine pregnant women (49%) needed no periodontal treatment, whereas twenty four (25%) needed oral hygiene instruction

scaling and oral care, thirty two (33%) needed advanced periodontal treatment in addition to oral hygiene instruction and scaling.

Table 1: Criteria for the community periodontal index of Treatment needs

Periodontal status	Treatment needs
0= Health Periodontium	0= No treatment needed
1= Breeding observed, directly or by using mouth mirror after sensing	I= oral Hygiene needs improvement
2= calculus felt during probing but the entire black area of the prob is visible	II=I+Professional scaling
3= Pocket 4 or 5mm (gingival margin is situated on black area of prob)	II=I+Professional scaling
4= Pocket>6mm (black area of prob not visible)	III=I+II+complex treatment

Table 2: Distribution of gingivitis in pregnant and non-pregnant women in Zanjan (Dec. 2006-Feb.2008)

Non-pregnant		Pregnant		Inflammation	P
N	%	N	%		
45	44.1	54	56.8	Gingivitis	0.008
57	55.9	41	43.2	No-Gingivitis	
102	100	95	100	Total	

Table 3: Distribution of calculus accumulation in pregnant and Non-pregnant women in Zanjan (Dec. 2006-Feb.2008)

Non-pregnant		Pregnant		Calculus presence	P
N	%	N	%		
39	38.2	45	47.2	Calculus	0.03
63	61.8	50	52.6	No-calculus	
102	100	95	100	Total	

Table 4: Distribution of plaque Index in pregnant and Non-pregnant women in Zanjan (Dec. 2006-Feb.2008)

Non-pregnant		Pregnant		Plaque index	P
N	%	N	%		
24	23.5	20	21.1	Code 0	
51	50	50	52.6	Code 1	
15	14.7	22	23.2	Code 2	0.003
12	11.8	3	3.2	Code 3	
102	100	95	100	total	

Table 5: Distribution of maximum code of CPITN in pregnant and Non-pregnant women in Zanjan (Dec. 2006-Feb.2008)

Non-pregnant		Pregnant		CPITN code	P
N	%	N	%		
75	73.5	39	41.1	0	
0	0	6	6.3	2	0.0001
0	0	18	18.9	3	
27	26.5	31	33.7	4	
102	100	95	100	total	

DISCUSSION

This study indicated that gingival inflammation, presence of plaque and calculus and consequently, gingival bleeding in pregnant women are more than those in non-pregnant ones. Previous studies have reported a high prevalence of gingivitis and also gingival bleeding among pregnant women.^(13, 14) The prevalence of gingivitis in pregnant women ranges from 30% to 100%.^(4, - 6) Our finding that probing depth increases during pregnancy was consistent with reports of others.^(13, 14) Probing depth is a very important index for diagnosis of periodontal disease and any increase of it can be considered as a sign of

peridontium destruction. Also, the results of our study showed the code zero of CPITN (that indicates no need for treatment) has maximum distribution in control group (73%) but it is far less in case group (41%). Code four of CPITN that indicates the need for advanced periodontal treatment in pregnant women was remarkably more than that in non pregnant women (33% and 26%, respectively). According to our finding, pregnant women need more oral hygiene instruction and scaling than non pregnant women. These findings are completely consistent with the results of other researches.^(13, 14) Because of hormonal changes which occur during pregnancy,

women in this period of life are very susceptible for gingival- periodontal disease (in general, oral disease). Our findings, consistent with others reports, revealed that pregnant women need more oral hygiene instruction and care to prevent oral diseases, especially gingivitis and periodontitis, during gestation. Oral hygiene instruction, including how to care oral health during gestation, and after delivering, is one of the most important parameters in health program which should be considered for pregnant women and also for young women who are planning to have baby.

Further study into factors that contribute to periodontal disease, as well as ways of preventing them, during pregnancy are still essential needs.

ACKNOWLEDGEMENT

The authors would like to thank the personnel of the health center of the city of Zanjan for their assistance with this study.

REFERENCES

1. Pitcairn J. A case of disease of the gums (that) occurred during pregnancy 1818, Hosp. Rep 2: 309
2. Pinard A. Gingivitis in pregnancy. Dent Register 1877; 31:258.
3. Hanson L, Sobol SM, Abelson T. The otolaryngologic manifestation of pregnancy. J Fam Pract 1986; 23:1510.
4. Levin RP. Pregnancy gingivitis. Dent Assoc 1987; 30:27.
5. Samant A, Malik CP, Chabar SK. Devi, PK. Gingivitis and Periodontal disease in pregnancy. J Clin Periodontal 1976; 47: 415.

6. Raber- Durlacher JE, Van steenberg TJ, van der relden U. Expenmental gingivitis during Pregnancy and postpartum: Clin ical endocrinological and microbiological aspects . J Clin Periodontal 1994; 21: 549.
7. Lindhe J. Branemark P. changes in vascular Permeability after local application of sex hormones. J Periodontal Res 1967; 2:259.
8. Kinnhy B, Matssonl, Astedt B. Aggravation of gingival inflammatory symptoms during pregnancy associated with the concentraton of activator inhibitor type 2 (PAI-2) in gingival fluid. J Periodontal Res 1996; 31: 271.
9. Sooriyamoorthy M, Gower DB. Hormonal influences on gingival tissue, relationship to Periodontal disease. J Clin Periodontal 1989; 16:201.
10. Ojanotko-Harri AO, Harri MP, Hurrita HP, Sewon, LA. Altered tissue metabolism of progesterone in pregnancy gingivitis and granuloma. J Clin Periodontal 1991; 18:262-6.
11. Kalkwarf KL. Effect of oral contraceptive therapy on gingival inflammation in humans. J Clin Periodontal 1978; 49: 560.
12. Aminamo J, Barmes D, Beagrie G. Cutress, T. Martin, J. Sardo-Infirrij Development of the world Heath organization (WHO) community Periodontal Index of treatment needs (CPITN). Int Dent J 1982; 32(3): 281-91
13. Raber Durlacher JE, Leene W, plamer-Boava cc, Raber J, Abraham-Inpiyn L. Experimental gingivitis during pregnancy and post- Partum, Immunohistochemical aspects. J Periodontal 1993; 64:211-218.
14. Miyazaki H, yamashita Y, Shirahama R. Goto-kimura K, Shimada N, Sogame A, Takehara T, Periodotnal condition of pregnant women assessed by CPITN. J Clin Periodontal 1991; 18:751-754.