

PERIODONTAL STATUS IN POSTMENOPAUSAL WOMEN WITH OSTEOPOROSIS VERSUS WITH NORMAL BONE MINERAL DENSITY

Dr Roma Rathee; Dr Manpreet Kaur; Dr Rajinder Kumar Sharma; Dr Shikha Tewari

Corresponding author: Dr Rajinder Kumar Sharma, Senior Professor, Department of Periodontics, Post Graduate Institute of Dental Sciences, Rohtak

e-mail: rksharmamds@yahoo.in

INTRODUCTION

- Osteoporosis is characterised by:
 - Compromised bone strength (measured in terms of bone density and bone quality).
- Periodontitis is microbially-associated, host-mediated inflammation that results in periodontal attachment loss.(1)
- Both osteoporosis and periodontitis share a number of common risk factors. Moreover, various mechanisms are suggested for an association of osteoporosis and periodontitis in post-menopausal women.
- Estrogen deficiency, the major cause of osteoporosis in postmenopausal women(2) is linked to increased alveolar bone loss,(3) and raised inflammatory and bone resorptive markers in periodontal tissues of rats with experimental periodontitis.(4)

OBJECTIVE

- Previous studies have studied the association of osteoporosis in postmenopausal women with periodontitis; however, the results remain inconclusive.(5,6,7) It may be due to varying methodologies and the presence of confounders (8,6) that may alter the association between two inflammatory conditions.
- With this background, the present study was conducted to assess periodontal status in systemically healthy postmenopausal women with osteoporosis and with normal bone mineral density.

MATERIAL AND METHODS

- Study design:**
 - Cross-sectional study was conducted in the Department of Periodontics.
 - Study was conducted in accordance with the ethical standards outlined in the Declaration of Helsinki 1975, as revised in 2013.
 - Written informed consent was obtained after explaining the nature and purpose of study.
- Study population:**
 - Postmenopausal women with osteoporosis (TG) and normal bone mineral density (CG) aged 50-65 years were included.
 - Sample size in each group: (n) = 15

INCLUSION CRITERIA	EXCLUSION CRITERIA
<ul style="list-style-type: none"> Systemically healthy females Females in natural menopause for at least 5 years. Osteoporosis defined by a T-score ≤ -2.5 and normal bone density as $T \geq -1$. Age: 50 to 65 years Periodontitis with ≥ 20 natural teeth (excluding third molars). 	<ul style="list-style-type: none"> Systemic disease known to effect BMD including rheumatoid arthritis, ankylosing spondylitis, SLE, and COPD. Women with early onset menopause or under treatment for low BMD with systemic medications, including calcium and vitamin D supplementation, bisphosphonates, and hormone replacement therapy History of hysterectomy Current or former smokers or use of smokeless tobacco in any form Periodontal treatment within 1 year prior to inclusion into the study

Periodontal examination included plaque index (PI), gingival index (GI), bleeding on probing (BOP), probing pocket depth (PPD) and clinical attachment loss (CAL).

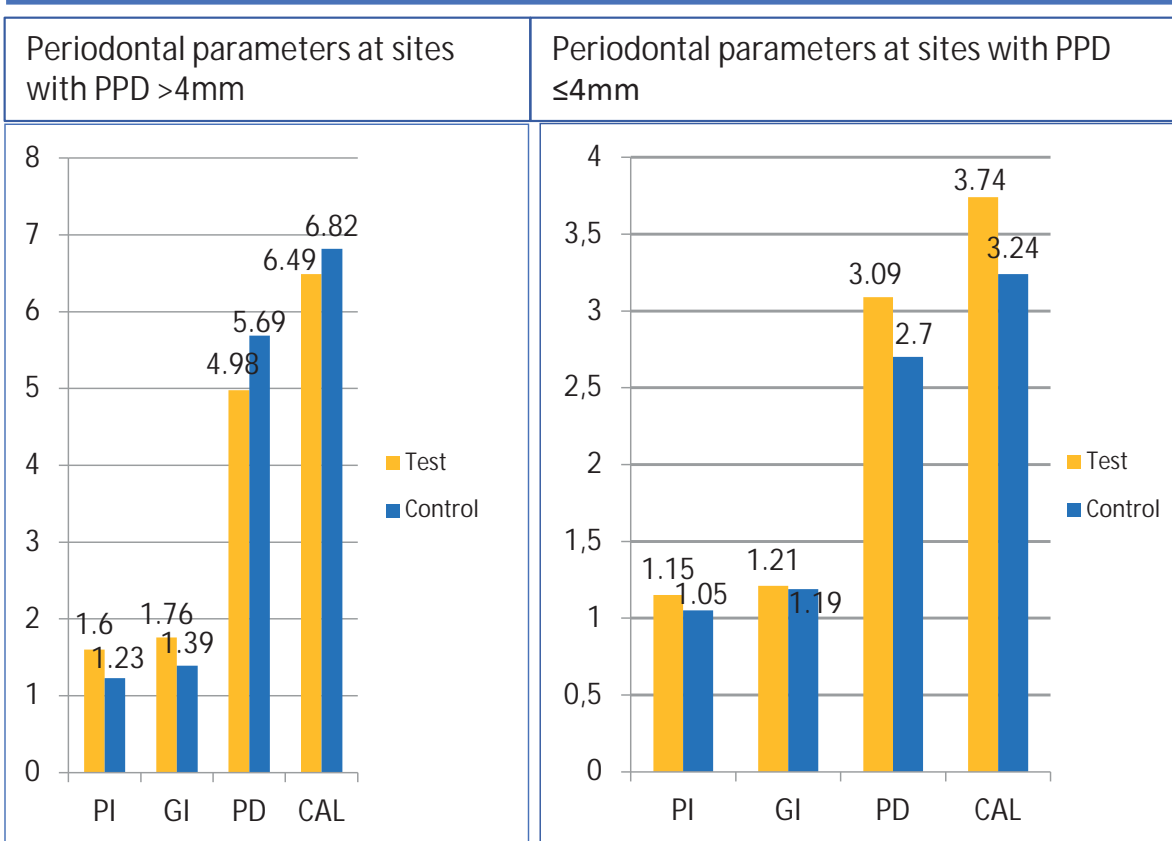
RESULTS

Parameters	TG	CG	P
No. of intact teeth present/patient	24.93 \pm 2.31	24.60 \pm 1.96	.673 [#]
Age (years)	58.27 \pm 4.74	55.20 \pm 4.26	.073 [#]
PI	1.30 \pm .35	1.09 \pm .12	.048 [*]
GI	1.44 \pm .37	1.22 \pm .23	.101 [*]
BOP (%)	84.42 \pm 11.28	80.93 \pm 9.27	.362 [#]
PPD (mm)	3.67 \pm .44	3.27 \pm .54	.059 [*]
CAL (mm)	4.52 \pm .53	3.94 \pm .49	.005 [#]

*Mann-Whitney test; [#] Unpaired t test

Parameters	Group	PPD \leq 4mm	PPD $>$ 4mm
Sites n (%)	TG	1532(68.27%)	712(31.73%)
	CG	1744(78.77%)	470(21.23%)
	P	.000 [¥]	.000 [¥]

¥ Chi-square test



	TG	CG	P
CAL 1-2mm, n(%)	297(13.24%)	417(18.83%)	.000 [¥]
CAL 3-4mm, n(%)	815(36.32%)	1049(47.38%)	.000 [¥]
CAL \geq 5mm, n(%)	1132(50.45%)	748(33.79%)	.000 [¥]

¥ Chi-square test

CONCLUSION

Within the limits of study, it is concluded that post-menopausal osteoporotic females had higher attachment loss than females with normal bone mineral density. However, bone mineral density had no significant impact on periodontal inflammation measured in terms of BOP

REFERENCES

- Tonetti MS, Greenwell H, Kornman KS. Staging and grading of periodontitis: Framework and proposal of a new classification and case definition. J Periodontol 2018, 89 pp. S159-S172.
- Recker R, Lappe J, Davies KM, Heaney R. Bone remodeling increases substantially in the years after menopause and remains increased in older osteoporosis patients. J Bone Miner Res 2004, 19, pp. 1628-1633.
- Xu XC, Chen H, Zhang X, Zhai ZJ, Liu XQ, Zheng XY, Zhang J, Qin A, Lu EY. Effects of oestrogen deficiency on the alveolar bone of rats with experimental periodontitis. Mol Med Rep 2015, 12, pp. 3494-3502.
- Luo K, Ma S, Guo J, Huang Y, Yan F, Xiao Y. Association between postmenopausal osteoporosis and experimental periodontitis. Biomed Res Int 2014, 316134.
- Mohammad AR, Hooper DA, Vermilyea SG, Mariotti A, Preshaw PM. An investigation of the relationship between systemic bone density and clinical periodontal status in post-menopausal Asian-American women. Int Dent J 2003, 53, pp. 121-125.
- Takahashi O, Yoshihara A, Nakamura K, Miyazaki H. Association between periodontitis and systemic bone mineral density in Japanese community-dwelling postmenopausal women. J Dent 2012, 40, pp. 304-311.
- Zhu J, Li JH, Yuan TT, He L, Liang YH. Relationship between periodontitis and osteoporosis in postmenopausal women. Beijing Da Xue Xue Bao Yi Xue Ban 2019, 51, pp. 1115-1118. Chinese.
- Lundström A, Jendle J, Stenström B, Toss G, Ravalid N. Periodontal conditions in 70-year-old women with osteoporosis. Swed Dent J 2001, 25, pp. 89-96.