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- **P1-2 Dr. Tao Xu,** Professor at Peking University School of Stomatology, the current President of Asian Academy of Preventive Dentistry, Vice President of Chinese Stomatological Association and the Director of WHO Collaboration Center for Research and Training in Preventive Dentistry in China.
- **P1-3 Dr. Seung-Chul Shin,** DDS, PhD, President Korean Dental Health Association, Vice President, Korean Academy of Preventive Dentistry, Professor, School of Dentistry, Dankook University, Korea.
- **P1-4 Dr. Yoko Kawaguchi,** DDS, PhD, Professor, Department of Oral Health Promotion, Graduate School of Medical and Dental Sciences, Tokyo Medical and Dental University (TMDU), Japan.
- **P2-1 Dr. Prathip Phantumvanit**, DDS, MSc, DDS(Hons), Vice-chairman of Public Health Committee of the World Dental Federation (FDI), President of the Center for assessment and accreditation for dental licensure in Thailand, the elected Board member of Thai Dental Council, Thailand.
- **P2-2 Dr. Ming-Lun Hsu**, DDS, DMD, President of Chinese Taipei Association for Dental Sciences, Professor and Dean of School of Dentistry, National Yang-Ming University, Taiwan, China.
- **P2-3 Dr. Jennifer E. Gallagher**, PhD, MSc, DCDP, BDS, FDSRCSEng, DDPH, FHEA, Professor of Oral Health Strategy, Honorary Consultant in Dental Public Health and Head of Population and Patient Health at King's College London Dental Institute (at Guy's King's College and St Thomas's Hospitals), United Kingdom.
- **P2-4 Dr. Edward C.M. Lo**, BDS, PhD, Chair Professor in Dental Public Health in the Faculty of Dentistry in the University of Hong Kong, Hong Kong SAR, China.
- **P2-5 Dr. Xi-ping Feng,** Director of Committee of Preventive Dentistry of the

Chinese Stomatological Association, Vice President of Shanghai Jiaotong University College of Stomatology, Vice Director of Shanghai Research Institute of Stomatology, the head of the Department of Preventive Dentistry of the Ninth People's Hospital affiliated to Shanghai Jiaotong University College of Medicine, China.

Symposium Session Speakers' information

Session 1 Prevention of caries

- **S1-1 Dr. Minquan Du,** DDS, PhD, Professor & Director of the Department of Preventive Dentistry, School & Hospital of Stomatology, Wuhan University, China.
- **S1-2 Dr. Rahimah Abdul Kadir,** DDS, MSD, MPH, DrPH, Dean and Professor, Faculty of Dentistry, Lincoln University College Malaysia and, Malaysian Chair: Alliance for Caries Free Future (ACFF); Consultant for Nicotine Addiction Research Collaborative Group, University Malaya Centre for Addiction Sciences, Malaysia.
- **S1-3 Dr. Nuo Zhou,** DDS, MD, PhD, FICD, Vice President of Guangxi Medical University (GXMU) and Dean, Professor, and PhD supervisor at College of Stomatology, GXMU, Guangxi, China.
- **S1-4 Dr. May C.M. Wong**, BSS, PhM, PhD, Associate Professor (Dental Public Health), Faculty of Dentistry, University of Hong Kong, Hong Kong SAR, China.
- **S1-5 Dr. Krishan Gauba,** BDS, MDS, from Panjab University is Professor & Chairman, Unit of Pedodontics and Preventive Dentistry and HEAD, Oral Health Sciences Centre, Postgraduate Institute of Medical Education and Research, Chandigarh, India

Session 2 Early Childhood Caries

- **S2-1 Dr. Risqa Rina Darwita**, DDS., Ph.D, Lecturer in Department of Dental Public Health and Preventive Dentistry, Faculty of Dentistry University of Indonesia, Indonesia.
- **S2-2 Dr. Yan Si**, DDS, PhD, Vice Director, Associate Professor, Department of Preventive Dentistry, Peking University School and Hospital of Stomatology,

China.

- **S2-3 Dr. Huancai Lin,** BDS, M.Phil, PhD, Professor and Associate Dean Guanghua School of Stomatology Sun Yat-sen University, Head of Department of Dental Public Health of Guanghua School of Stomatology Sun Yat-sen University, China.
- **S2-4 Dr. Kazunari Kimoto,** DDS, PhD, Associate Professor, Department of Oral Health, Graduate School of Dentistry, Kanagawa Dental University, Japan.
- **S2-5 Dr. Deyu Hu**, DDS, MS, Professor of Department of Preventive Dentistry, West China College of Stomatology, Sichuan University, chair of the Chinese Association of Dental Public Health, China.

Session 3 Malodor and laboratory studies

- **S3-1 Dr. Shuguo Zheng,** DMD, PhD, M Paed Dent RCS (Edin., UK), Professor and Chairman, Department of Preventive Dentistry, Peking University School of Stomatology, China.
- **S3-2 Dr. Rahimayanti Rudi Rahim,** drg., MPHM, Government employee (Banjar District Health Office, South Kalimantan, Indonesia); Private dentist (General Practitioner), Indonesia.
- **S3-3 Dr. Yong Duk Park,** BS, DMD, MSD, PhD, Vice President for Korean Academy of Preventive Dentistry, Head Professor of prev. & social dent., School of Dentistry, Kyung Hee University, Korea.
- **S3-4 Dr. Ja-Won Cho,** DDS, MSD, PhD, Associate Professor, Chairman, Department of Preventive Dentistry, School of Dentistry, Dankook University, Korea.
- **S3-5 Dr. Kinya Higuchi,** DDS, PhD, President of Higuchi Dental Clinic Co Med, Higuchi Dental Co. Med. Osaka, Japan.
- **S3-6 Dr. Xuenan Liu,** PhD, Associate Professor, Department of Preventive Dentistry, Peking University School of Stomatology, China.

Session 4 Oral health promotion

- **S4-1 Dr. Yuxing Bai**, DDS, PhD, Dean of School of Stomatology, Capital Medical University, director of Beijing Institute of Dental Disease Prevention, Vice-President of Chinese Orthodontic Society and Chinese Association of Computerized Dentistry, China.

- **S4-2 Dr. Bazar Amarsaikhan,** DDS, PhD, Medical Advisory Committee to President of Mongolia, Professor and Vice President for Research and Foreign affairs, Health Sciences University of Mongolia, Mongolia.
- **S4-3 Dr. Shengchao Wang,** PhD, DDS, Director and Chair of Department of Preventive Dentistry, School of Stomatology, the Fourth Military Medical University (FMMU), China.
- **S4-4 Dr. Armasastra Bahar,** DDS, PhD, Chairman of Indonesia Dental Council, Academic Senate of University Indonesia, Professor of University Indonesia Faculty of Dentistry, Indonesia.
- **S4-5 Dr. Jian Lv**, Associate chief physician, Master's supervisor, Director of Department of Preventive Dentistry, Qingdao Stomatological Hospital, China.

PO2-008

B18

Relationship bone mineral density and resorption of alveolar

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Objectives: Osteoporosis is a degenerative disease characterized by reduced metabolic bone mass and bone micro-architect so that the risk of failure. Low bone mineral density is a clinical condition in patients with osteoporosis. The high rate of decline in bone mineral density can lead to tooth loss. The purpose of this study was to determine the relationship of reduction in bone mineral density of the alveolar bone resorption so expect no early prevention of tooth loss in people with osteoporosis and osteopenic.

Methods: The sampling method using a random sampling technique. The sample consisted of 36 subjects included men and women with age group 20-71 years. The tools used to retrieve the data is dual energy x-ray absorptiometry (DXA) to assess bone mineral density reduction. Alveolar bone resorption in maxillary incisors with the technique of panoramic radiographs. Data obtained by measuring bone mineral density at the spine, articulatio radiocarpalis, femoral neck. In bone mineral density T-score (WHO, 2003) as follows: Osteoporosis is a bone mineral density <-2.5. Osteopenia is bone mineral density between -1 SD and - 2.5. When normal bone mineral density> -1. Alveolar bone resorption measured if there is loss of bone in the maxillary incisors, alveolar crest more than 2 mm apical to the CEJ toward the limit.

Results: Obtained bone mineral density: normal = 8, osteopenic = 15, osteoporosis = 13. Alveolar bone resorption: no resorption = 8, resorption 2-4 mm = 16 and resorption of > 4 mm = 12. Test performed correlation analysis with SPSS version 21, the results of the study there is a relationship between age and bone density value of r = 0.378, between age and alveolar bone resorption value of r = 0.442, between bone mineral density and alveolar bone resorption r = 0368.

Conclusion: There is a relationship between bone mineral density and resorption of alveolar and associated with increased age.

Keywords: Bone Mineral Density; Alveolar Resorption

PO10-019

Silver diamine fluoride efficacy in arresting caries of preschool children

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Objectives: The aim of this study was to evaluate Silver Diamine Fluoride (SDF) application to overcome untreated active dental caries on deciduous teeth in preschool.

Methods: A cohort study was conducted on 115 children aged 3-5 years old, with carious lesions resides in an Indonesian Suburb Area. 81 children were the intervention group and 34 children were included to the control group. Clinical dental examination was performed to assess dentinal active caries of each surfaces of the tooth. SDF treatment was given to subjects in the intervention group. A 10 month follow up was conducted to asses the percentage of arrested caries due to SDF treatment.

Results: A total of 1144 surface which were active caries and were applied with SDF. After 10 month, the SDF applicated dental surfaces were evaluated. 69.7% (N=797) of the SDF applied dental surfaces in the intervention group stayed arrested, but only 26,3% (N=105) surfaces of the dental caries become arrested in the control group.

Conclusion: This study shows that application of Silver Diamine Fluoride (SDF) is effective to arrest caries in children. The black staining that caused by SDF application is not a problem for most of the subjects. Treatment of SDF in Children should be emphasized in Indonesia especially in the area with high caries index and low socioeconomic status. However, Dental Health Education and Oral Health Promotion should be given to all subjects, in order to change the oral health behaviour of the mother and children

Keywords: Silver Diamine Fluoride; Caries; Decidious Teeth

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RELATIONSHIP BONE MINERAL DENSITY AND RESORPTION OF ALVEOLAR

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Abstract:

Objectives: Osteoporosis is a degenerative disease characterized by reduced metabolic bone mass and bone micro-architect so that the risk of failure. Low bone mineral density is a clinical condition in patients with osteoporosis. The high rate of decline in bone mineral density can lead to tooth loss. The purpose of this study was to determine the relationship of reduction in bone mineral density of the alveolar bone resorption so expect no early prevention of tooth loss in people with osteoporosis and osteopenic.

Methods: The sampling method using a random sampling technique. The sample consisted of 36 subjects included men and women with age group 20-71 years. The tools used to retrieve the data is dual energy x-ray absorptiometry (DXA) to assess bone mineral density reduction. Alveolar bone resorption in maxillary incisors with the technique of panoramic radiographs. Data obtained by measuring bone mineral density at the spine, articulatio radiocarpalis, femoral neck. In bone mineral density T-score (WHO, 2003) as follows: Osteoporosis is a bone mineral density <-2.5. Osteopenia is bone mineral density between -1 SD and - 2.5. When normal bone mineral density> -1. Alveolar bone resorption measured if there is loss of bone in the maxillary incisors, alveolar crest more than 2 mm apical to the CEJ toward the limit.

Results: Obtained bone mineral density: normal = 8, osteopenic = 15, osteoporosis = 13. Alveolar bone resorption: no resorption = 8, resorption 2-4 mm = 16 and resorption of > 4 mm = 12. Test performed correlation analysis with SPSS version 21, the results of the study there is a relationship between age and bone density value of r = 0.378, between age and alveolar bone resorption value of r = 0.442, between bone mineral density and alveolar bone resorption r = 0.368.

Conclusion:There is a relationship between bone mineral density and resorption of alveolar and associated with increased age.

Key word: bone mineral density, alveolar resorption

INTRODUCTION

Osteoporosis is a metabolic bone disease characterized by reduced bone mass, due to reduced bone mineral matrix and the damage to the micro architecture of bone tissue. The incidence of osteoporosis in women is higher than men. That is one of the three women have a tendency to develop osteoporosis, at the age of 45 years, accelerating the process of osteoporosis in women is 80%. While the males are smaller number of events, ie one of the seven men. Osteoporosis usually affects most women who post menopause.[1,2]

The occurrence of osteoporosis is caused by the cellular number and activity of osteoclasts in excess of the number and activity of osteoblasts (bone forming cells) caused a decline in the state's bones.[1]

There are four categories of diagnosis of bone mass (bone mineral density) based on T-score using dual energy x-ray absorptiometry (DXA) is as follows:[1]

a. Normal: T-score greater than or equal to -1 SD.
b. Osteopenia (low bone mass): T-score between -1 SD to -2.5 SD.
c. Osteoporosis: T-score below -2.5 SD.
d. Further Osteoporosis: T-score below -2.5 SD in the presence of one or more fractures or osteoporosis.

Periodontitis is an inflammatory disease characterized by the loss of alveolar bone resorption and periodontal tissue attachment to the teeth and the presence of inflammation, is a major cause of tooth loss in adults and the elderly. A study shows that osteoporosis can lead to periodontal attachment loss in the form of gingival recession. Several other studies in the field of dentistry to prove that the occurrence of osteoporosis at the lumbar spine vertebrae and femoral head, followed by osteoporosis on bone.[3,4]

Periodontal tissues supporting the teeth is a network consisting of gingiva, cementum, periodontal ligament and alveolar bone. One of the common disease

in the community is periodontal disease. Periodontal disease begins with inflammation of the gums accompanied by changes in color, shape, followed by bleeding in the tissues. Common etiology of periodontal disease can be divided into two factors, namely: local factors and systemic factors, local factors are the cause of which is located around the periodontal tissues, which can cause abnormalities, such as: plaque, calculus and leftovers. whereas systemic factors include everything that affects the periodontal tissue response to local inflammation, among other things: hormonal, nutritional deficiencies and diseases sistemik.[5,6]

MATERIALS AND METHODS

Type of research is observational. This study uses cross-sectional study. The number of samples is 33 research subjects. examination is a clinical examination of the oral cavity to determine the dental records of each sample, further examination of the oral cavity using a photo panorami x-ray, blood tests continued with the laboratory, and the last examination of bone mineral density at the lumbar vertebrate and femoral head using DXA at the hospital. DR. Wahidin Soudero Husodo, having regard to the inclusion and exclusion criteria.

Inclusion

a. Women or men who come see the bone
b. Patients were diagnosed as normal, osteopenia, and osteoporosis in one of the examination of the bones of the spine and hip bone
c. Do not suffer from diabetes and gout
d. Having more than six teeth

Exclusion

a. Has a value of T-score <-1 for osteopenia and <-2.5 for patients with osteoporosis at one site inspection
b. Have bone abnormalities
c. Third molars
d. Have systemic disease

Index to measure the gingival inflammation. The index used is the gingival index (GI) according to the WHO.

Examination of gingival conditions performed on the remaining teeth except tooth residual root.[3]

For the assessment of gingival scores:

a. Worth 0.1-1.0: mild inflammation.
b. Worth 1.1 to 2.0: Inflammation is.
c. Worth 2.1 to 3.0: Indicates severe inflammation.

To measure oral hygiene is to measure the surface area of the tooth is covered by debris and calculus to determine the choice of six tooth surfaces that can represent all segments of the anterior and posterior of the mouth based on the examination will be undertaken. Each tooth surface for horizontally into three sections: the gingival third, the middle third, third insisal.[8]

To obtain the final score of the number of debris index and the calculus index are as follows:

a. Well worth = 0 to 0.6
b. Medium-value = 0.7 to 1.8
c. Bad-value = 1.9 to 3.0

To obtain an index score of calculus and debris per person index is obtained by summing the scores for each of calculus on the tooth surface and six from the surface of the tooth in check.

To obtain the final total score of OHI-S is as follows: [8]

a. Well worth when scores from 0.0-1.2.
b. If the score is worth 1.3 -3.0.
c. Worth bad when scores from 3.1-6.0.

To get a score of OHI-S per person is obtained by summing the scores debris index and the calculus index.

RESULTS

This parameter is used in the statistical state of the gingiva, debris index, calculus index and OHI-S General characteristics of samples shown in Table 1.

Table 1 Characteristics of Research Subjects

Caracteristic	Min	Max	Mean±SD
Age (yr)	14	71	56,1 ± 10,9
lumbar	-4.3	0.6	-1,84± 1,22
BMI (kg / m 2)	16,8	34,2	24,3 ± 4,28
number of Teeth	3	28	18,0 ± 6,51
Serum Calcium (mg / dL)	7,6	9,8	8,37 ± 0,53
periodontal Index	0,2	4	2,19 ± 1,03

Table 2 Distribution of gingival index on bone mineral density.

(GI)	Bone Mineral Density		
	Normal (n = 6)	Osteopenia (n = 15)	Osteoporosis (n = 12)
Good (n=10)	3(50,0%	3 (20,0%)	4 (33.3%)
medium (n=23)	3(50,0%	12 (80,0%)	8 (66.7%)
Bad (n=11)	0 (0,0%)	0 (0,0%)	0 (0,0%)

Table 3 Distribution of debris index on bone mineral density.

(DI)	Densitas Mineral Tulang		
	Normal (n = 6)	Osteopenia (n = 15)	Osteoporosis (n = 12)
Good (n=7)	2 (33.3%)	4 (26.7%)	1 (8.3%)
Medium (n=21)	3 (50%)	11 (73.3%)	7 (58.3%)
Bad (n=5)	1 (16.7%)	0 (0,0%)	4 (33.3%)

Table 4 Distribution of calculus index on bone mineral density.

(CI)	Bone Mineral Density		
	Normal (n = 6)	Osteopenia (n = 15)	Osteoporosis (n = 12)
Good (n=6)	2(33.3%)	3 (20%)	1 (8.3%)
medium (n=20)	1 (16.7%)	11 (73.3%)	8 (66.7%)
Bad (n=7)	3 (50%)	1 (6.7%)	3 (25%)

Table 5 Distribution of OHI-S on bone mineral density.

OHI-S	Bone Mineral Density		
	Normal (n = 6)	Osteopenia (n = 15)	Osteoporosis (n = 12)
Good (n=2)	1 (16.7%)	1 (6.7%)	0 (0%)
Medium (n=23)	2 (33.3%)	12 (80%)	9 (75%)
Bad (n=8)	3 (50%)	2 (13.3%)	3 (25%)

From the studies it appears that the low levels of bone mineral density (BMD) of the gingival state showed no significant results (p> 0.005). Moreover index debris, calculus and OHI-S index showed significant results in the low BMD (p> 0.005). But the gingival inflammation, debris index, calculus index and OHI-S shows that the increase is accompanied by a decrease in bone mineral density.

DISCUSSION

Research results in Table 2 it appears that the low levels of DMT to the gingival index showed no significant results (p> 0.005). inflammation of gingival inflammation was highest in more obtained osteopenia (80%) and osteoporosis (66.7%) with normal bone mineral density (50%) showed a trend these circumstances gingival inflammation accompanied by a decrease in bone mineral density.

Research results in Table 3 shows that the low levels of DMT to the debris index

showed no significant results (p> 0.005). Debris index was highest in the state of the debris being osteopenic (73.3%) and osteoporosis (58.3%) compared with normal bone mineral density (50%) showed a trend increase in debris index is accompanied by a decrease in bone mineral density.

Research results in Table 4 it appears that the low levels of DMT to the index calculus shows that the results are not significant (p> 0.005). Calculus index most widely found in the state and obtained calculus is higher in osteopenic (73.3%) and osteoporosis (66.7%) compared with normal bone mineral density (16.7%) this situation calculus showed an increasing trend with decreased bone mineral density.

Research results in Table 5 it appears that the low levels of DMT to the OHI-S showed no significant results (p> 0.005). OHI-S is the most widely found in the state of OHI-S were found more in osteopenia (80%) and osteoporosis (75%) compared with normal bone mineral density (33.3%) this state of existence shows the trend of poor OHI-S accompanied by a decrease bone mineral density.

In a study conducted by Reinhardt et..al that want to see the bleeding on probing and gingival attachment levels in 59 women with periodontitis and 16 women without periodontitis, in 5 years of menopause and reported osteoporotis periodontitis patients with estrogen deficiency has bleeding on probing and decreased levels of adhesion on gingiva.[9] Another study in the show by elders et al. compare the clinical parameters of periodontitis and alveolar bone height with BMD of the lumbar spine. No statistically significant increase was observed in gingival bleeding, probing pocket depth, gingival recession and marginal bone level subjects with low BMD compared with subjects with BMD hight.[9]

Significant results shown by other studies conducted by Snophia S, et.al in

2010 this study wanted to see the relationship between BMD and periodonsitis in women pre and post-menopause with a sample size of 20 people (10 controls and 10 cases). Veriabel associated with DMT at the lumbar spine and femur are age, BMI, number of teeth, plaque index, pocket depth, attachment loss support networks, and alveolar bone resorption. Based on the statistical test chi-squere seen that low BMD at the lumbar spine and femur showed significant results in plaque index, pocket depth, attachment loss support networks, and bone resorption alveolar.[10]

In gingival inflammation indicate that the tendency of increase in gingival inflammation accompanied by a decrease in bone mineral density but not significantly, and showed a statistically significant correlation indicates the existence of other factors that cause gingival inflammation and OHI-S on the decline in bone mineral density. The main cause is the lack of gingival inflammation maintaining oral health. However, other factors are also involved in gingival inflammation, lack of brushing and visits to the dentist are also used effects gingival inflammation and oral hygiene. Therefore, this factor is a reason why the approach is not obtained significant results between low bone mineral density of the gingival inflammation and OHI-S status.

Difficult for comparing several other studies of osteoporosis in gingival circumstances, indexes debris, calculus and OHI-S index for different types of studies, as well as differences in the research methods of diagnosing osteoporosis, gingival circumstances, indexes debris, calculus and OHI-S index. So the difference in the results of the study were not significant and also significantly influenced by the type of research, research methods used, as well as the number of samples used.

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