IOF Regionals
4th Asia-Pacific Osteoporosis Meeting
12 – 15 December 2013
Hong Kong

P301
Tibia Mineral Element and Mesostructure at Different Time Course of Ovariectomized Rats

Zairin Noor, Nia Kania, Bambang Setiawan, Nicolaas C. Budhiparama
for age, BMI, grip strength, Cr, PTH, 25(OH)D, CTX, and L2-4 BMD, intake of Ca, vitamin D and vitamin K.

Conclusions: High sclerostin levels were shown to represent a risk factor for fragility fractures independent of motor function, nutrient intakes, 25(OH)D, renal function, bone metabolic markers and BMD.

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SERUM VITAMIN D CONCENTRATION AND ITS ASSOCIATED FACTORS IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS
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Aims: Vitamin D was documented to play a role in the pathogenesis of autoimmune diseases, including systemic lupus erythematosus (SLE). This study was aimed to evaluate serum concentration of vitamin D and its associated factors in patients with SLE.

Methods: Patients recruited in the study were recorded data on demographic and clinical aspects. Blood samples were taken and serum concentration of 25(OH)D(3) was measured using ELISA. 25(OH)D(3) associated factors such as diet, lifestyle, medication use, and disease activity score were assessed. Data were analysed using appropriate tests including Student’s t-test, chi-square tests, Pearson and ANOVA tests. A difference with p-value < 0.05 was considered significant.

Results: The study included 97 patients with SLE (95 females and 2 males). Average age was 33.7 ± 1.2 and disease duration was 4.8 ± 4.3 years. There were 40 % patients with SLEDAI < 3, 40 % patients with SLEDAI 3–12, and 24 % with SLEDAI > 12. Vitamin D3 (25-OH) concentration was 17.5 ± 1.04 ng/ml. Low serum concentration of 25(OH)D(3) were measured in 86 subjects, accounting for 88.7 % patients. 25(OH)D(3) deficiency in patients with SLE was found to associate with a number of factors including clinical manifestations and laboratory findings such as corticosteroid doses used (P < 0.01), disease activity (SLEDAI score, P < 0.01), and CRP concentration (P < 0.01).

Conclusions: Vitamin D deficiency was common disorder in patients with SLE. Up to 88.7 % patients with SLE were detected to have low serum concentration of 25(OH)D(3). Vitamin D deficiency in patients with SLE was found to associate with several factors including corticosteroid doses, disease activity and serum CRP concentration. Vitamin D supplementation may be necessary for effective treatment of patient with SLE.

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EVALUATE VITAMIN 25(OH)D3 SERUM LEVEL AND RELATIVE FACTORS IN PATIENTS WITH KNEE OSTEOARTHRITIS AT BACH MAI HOSPITAL
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1Bach Mai Hospital, Ha Noi, Vietnam

Aims: (1) To determine vitamin 25(OH)D3 serum level; (2) To determine relation between vitamin 25(OH)D3 serum level and other factors in patients with knee osteoarthritis at Bach Mai hospital.

Methods: Cross-sectional study included 70 patients with osteoarthritis (ACR 1991 criteria for osteoarthritis) at Bach Mai hospital from 10/2009 to 7/2013. Patients haven’t been diagnosed with knee osteoarthritis and haven’t been treated osteoarthritis and osteoporosis before administration. All patients were examined and recorded BMI. Knee radiographs were given scores for global severity of osteoarthritis, using a modification of the scale of Kellgren and Lawrence (range, 0 to 4). Serum concentration of 25(OH) D was measured by the electrochemiluminescence immunoassay on the Roche Elecsys system (Roche Diagnosis Elecsys). BMD was measured by DXA test.

Results: Study included 70 patients (16 men 22.9 % and 54 women 77.1 %). Mean age was 66.01 ± 6.5. Prevalence of stage 2 (according to the scale of Kellgren and Lawrence) was highest (61.4 %). Lumbar T-score was −2.45 ± 0.68 and hip T-score was −1.85 ± 0.64. (1) Mean serum vitamin 25(OH)D level was 26.01 ± 6.7 ng/ml. There was 67.1 % patients had serum vitamin 25(OH)D < 30 ng/ml. (2) The serum vitamin 25(OH)D3 in the group below the age of 65 was 28.03 ± 7.9 ng/ml, and that in the group above the age of 65 was 24.74 ± 5.57 ng/ml, p < 0.05. There was positive association between serum vitamin 25(OH)D3 and femoral neck T-score (r = 0.45; p < 0.05). There was no relation between serum vitamin 25(OH)D3 and factors: BMI, the severity of the disease and lumbar T-score.

Conclusions: Mean serum vitamin 25(OH)D3 was 26.3 ± 4.2 ng/ml, lower than normal serum vitamin 25(OH)D3 level. Serum vitamin 25(OH)D3 had a positive relation with femoral neck T-score and negative relation with the age of patients.

P301
TIBIA MINERAL ELEMENT AND MESOSTRUCTURE AT DIFFERENT TIME COURSE OF OVARIECTOMIZED RATS
Z. Noor 1, 2, N. Kania 1, 3, B. Setiawan 3, N.C. Budhiparama 4
1Orthopaedic and Traumatology, 2Pathology, 3Mikro Surgery, 4Budhiparama Institute of Hip and Knee Research and
Aims: This study was aimed to evaluate the changes of tibia mineral element and mesostructure at different time course of ovariecromized rats.

Methods: A total of 30 Wistar female rats were randomly divided into three groups including one control group and two groups for ovariecromized rats (evaluated at one and two months after ovariecromized procedure). Tibia bone mineral element was analyzed using X-ray fluorescence (XRF). Tibia mesostructure was assayed using scanning electron microscope (SEM). XRF and SEM was done in Central and Physics Laboratory, Malang State of University, Malang, East Java, Indonesia. ANOVA test was used to analyze the different level of tibia mineral element. This study was approved by Local Ethics Committee, Medical Faculty, University of Lambung Mangkurat, Banjarmasin.

Results: Mesostructure of control rats presented rod like trabeculae with honey comb appearance and minimal hole. Disregular integrity of trabeculae and reduction of trabecular integrity, increasing porosity were found at all ovariecromized groups. The levels of phosphorus, iron, and calcium/phosphorus were significantly higher in ovariecromized rats compared to control groups ($P<0.05$). The levels of nickel and copper were significantly lower in 1 month after ovariecromized group compared to control group ($P<0.05$).

Conclusions: The present study reported that ovariecromized changes mesostructure and phosphorus, calcium, zinc, nickel, copper, iron, calcium/phosphorus of rast's tibia.

P302
THE EFFECTS OF COMBINED PARTICULATE MATTER 10 COAL DUST EXPOSURE AND HIGH-CHOLESTEROL DIET ON FEMUR MINERAL ELEMENTS IN RATS
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1Medical Chemistry and Biochemistry, Faculty of Medicine, Lambung Mangkurat University, 2Orthopaedic and Traumatology, 3Pathology, Ulin General Hospital, Faculty of Medicine, Lambung Mangkurat University, Banjarmasin, 4Budhiparama Institute of Hip and Knee Research and Education Foundation for Arthroplasty, Sports Medicine and Osteoporosis, Jakarta, Indonesia

Aims: This study aimed to investigate the effect of combined particulate matter 10 (PM10) coal dust exposure and high-cholesterol diet on bone mineral elements in rats.

Methods: Thirty male Wistar rats were randomly divided into five groups. Rats were fed a normal diet (non-exposure group), or a high cholesterol diet concomitantly exposed to 12.5 mg/m³ of PM10 coal dust an hour daily for 5, 6, 7 or 8 weeks. Rats were sacrificed at the end of experiment, and then femur was collected. Bone mineral elements were analyzed using X-ray fluorescence in Central and Physics Laboratory, Malang State of University, Malang, East Java, Indonesia. ANOVA test was used to analyze the different level of tibia mineral elements. This study was approved by Local Ethics Committee, Medical Faculty, University of Lambung Mangkurat, Banjarmasin.

Results: Inorganic composition of coal dust were iron (29.3±0.1%), silicon (29.0±0.2%), calcium (12.00±0.07%), aluminum (10±0.2%), titanium (6.31±0.19%), phosphorus (5.90±0.04%), potassium (4.5±0.06%), barium (1.00±0.09%), and several inorganic minerals less than 1% including europium (0.70±0.00%), chromium (0.48±0.04%), nickel (0.41±0.00%), copper (0.34±0.02%), zinc (0.22±0.03%), vanadium (0.20±0.02%), and manganese (0.15±0.09%). X-ray diffraction showed 36.3% of crystalline with 177 nm crystal size consisting of ilite (potassium aluminum silicate hydroxide hydrate), viseite (calcium aluminum phosphate silicate hydroxide), and cronstedite (iron silicate hydroxyte). Combined coal dust exposure and high-cholesterol diet significantly increased phosphorus and calcium level relative to the non-exposure group ($P<0.05$). Combined coal dust exposure and high-cholesterol diet significantly decreased calcium/phosphorus ratio level than that of the non-exposure group ($P<0.05$). The level of iron and zinc was significantly higher in 5 weeks group compare to non-exposure group ($P<0.05$). Significant increase of copper level in combined coal dust exposure and high-cholesterol diet group was detected when compared with the non-exposure group ($P<0.05$).

Conclusions: The present study showed that concomitant coal dust exposure and high-cholesterol diet changes femur calcium, phosphorus, and calcium/phosphorus ratio in rats.

P303
MICROARCHITECTURAL CHANGES IN CANCELLOUS BONE DIFFER IN FEMALE AND MALE C57BL/6 MICE IN HIGH FAT DIET INDUCED OSTEOPOROSIS MODEL
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1Endocrinology, Central Drug Research Institute, 2Department of Molecular Medicine and Biotechnology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow, India

Aims: The study shows relationship between fat and bone mass at distinct trabecular and cortical skeletal compartments in (high fat diet) HFD induced osteoporosis model.

Methods: C57BL/6 mice were assigned into four groups of eight animals each. Two groups, of male and female received standard Chow diet while remaining two received HFD for 10 weeks. Daily food intake and weekly body weight was evaluated. Blood samples and tissue...
TIBIA MINERAL ELEMENT AND MESOSTRUCTURE AT DIFFERENT TIME COURSE OF OVARIECTOMIZED RATS

Zairin Noor1, Nia Kania2, Bambang Setiawan2, Nicolaas C Budhiparana4

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BACKGROUND

- Osteoporosis is characterized by a reduction in bone mass and the micro-architectural deterioration of bone tissue, bone fragility and an increase in susceptibility to fracture (Zhao et al., 2012).
- Ovariectomized (OVX) rats and dogs have been used extensively in osteoporosis models (Liang et al., 2011).
- Ovariectomized rats showed significant gradual increase in serum calcium and phosphorus levels (Shokanta et al., 2011).
- Blood zinc and copper levels in ovariectomized rats were significantly increased compared to the sham control (Liang et al., 2011).

OBJECTIVE

- This study was aimed to evaluate the changes of tibia mineral element and mesostructure at different time course of ovariectomized rats.

METHOD

- Tibia bone mineral element was analyzed using X-Ray Fluorescence (XRF).
- Tibia mesostructure was assayed using Scanning Electron Microscope (SEM).
- XRF, XRD and SEM was done in Central and Physics Laboratory, Malang State of University, Malang, East Java, Indonesia.

BONE MINERAL ELEMENTS

<table>
<thead>
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<th>Level (%)</th>
<th>Sham</th>
<th>OVX-1</th>
<th>OVX-2</th>
</tr>
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<tbody>
<tr>
<td>Calcium</td>
<td>53.00±2.17</td>
<td>53.21±2.07</td>
<td>53.75±2.24</td>
</tr>
<tr>
<td>Phosphorus</td>
<td>9.66±0.12</td>
<td>9.35±0.10</td>
<td>9.60±0.20</td>
</tr>
<tr>
<td>Iron</td>
<td>1.17±0.60</td>
<td>1.17±0.61</td>
<td>0.92±0.28</td>
</tr>
<tr>
<td>Copper</td>
<td>0.42±0.65</td>
<td>0.41±0.29</td>
<td>0.15±0.05</td>
</tr>
<tr>
<td>Zinc</td>
<td>0.78±0.28</td>
<td>0.79±0.24</td>
<td>0.78±0.17</td>
</tr>
<tr>
<td>Nickel</td>
<td>2.14±0.42</td>
<td>2.59±0.43</td>
<td>0.69±0.74</td>
</tr>
<tr>
<td>Cu</td>
<td>9.76±0.47</td>
<td>11.94±0.36</td>
<td>1.03±0.29</td>
</tr>
<tr>
<td>Cu/Zn</td>
<td>1.71±0.43</td>
<td>1.61±0.29</td>
<td>1.18±0.81</td>
</tr>
</tbody>
</table>

Co, Fe, Cu, Zn, Ni, Ca/P, and Cu/Zn levels were not significantly different in one month and two month after ovariectomized groups compared to control group (p > 0.05).

DISCUSSION

- This finding indicated that mineralization has adaptive process to compensate the effect of estrogen deficiency.
- Although reduced in mass, the bones are normal with respect to mineralization; however, histologically there could be significant decreases in thickness of the cortex and the number and size of trabeculae (Silkaota et al., 2011).

REFERENCES


CONCLUSION

- The present study reported that ovariectomized changes hydroxyapatite crystal and mesostructure, but not change bone mineral elements of rats's tibia.
CERTIFICATE OF POSTER PRESENTATION

We Cyrus Cooper, Tai Pang Ip, Timothy Kwok & Sue Lo certify that:

ZAIRIN NOOR

P301/ TIBIA MINERAL ELEMENT AND MESOSTRUCTURE AT DIFFERENT TIME COURSE OF OVARIECTOMIZED RATS

Has attended the IOF Regionals: 4th Asia-Pacific Osteoporosis Meeting, Hong Kong Convention and Exhibition Centre, Hong Kong, December 12-15, 2013.

Cyrus Cooper
Co-chair Scientific Committee

Tai Pang Ip
Co-chair Scientific Committee

Timothy Kwok
Co-chair LOC

Sue Lo
Co-chair LOC
CERTIFICATE OF ATTENDANCE

We Cyrus Cooper, Tai Pang Ip, Timothy Kwok & Sue Lo certify that:

Zairin NOOR

Has attended the IOF Regionals: 4th Asia-Pacific Osteoporosis Meeting, Hong Kong Convention and Exhibition Centre, Hong Kong, December 12-15, 2013.

CYRUS COOPER
Co-chair
Scientific Committee

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IOF has been accredited by the European Accreditation Council for Continuing Medical Education (EACCME) to provide the following CME activity for medical specialists.

IOF Regionals: 4th Asia-Pacific Osteoporosis Meeting is designated for a maximum of, or up to 16 European CME credits (ECMEC).

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Each medical specialist should claim only those credits that he/she actually spent in the educational activity.
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Live educational activities, occurring outside of Canada, recognized by the UEMS-EACCME for ECMEC credits are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada.

Each medical specialist should claim only those credits that he/she actually spent in the educational activity.
The EACCME is an institution of the European Union of Medical Specialists (UEMS), www.uems.net.

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Live educational activities, occurring outside of Canada, recognized by the UEMS-EACCME for ECMEC credits are deemed to be Accredited Group Learning Activities (Section 1) as defined by the Maintenance of Certification Program of The Royal College of Physicians and Surgeons of Canada.
Dear Dr Zairin NOOR,

We are pleased to inform you that your abstract entitled “TIBIA MINERAL ELEMENT AND MESOSTRUCTURE AT DIFFERENT TIME COURSE OF OVARIECTOMIZED RATS”, previously referenced as IOFHK13-1276, has been accepted for a poster presentation. Please note that your Abstract has been re-numbered and your final number is: P301. This final ID is to be used for your presentation as well as for any further correspondence.

In order to for you to answer questions from the poster viewers, to provide more information and to discuss your results with your colleagues, you are expected to be present at your poster in the Poster Area from 15.12.2013 13:30 to 15.12.2013 14:30.

INSTRUCTIONS FOR POSTER PRESENTERS

- Each poster will be displayed for one day only.
- At least one presenter is required to be present during the poster presentation day.
- All posters must be put up no later than 09:00 on the day of presentation and must be taken down by the end of the presentation day. Unclaimed posters will be taken down and disposed at the end of the presentation day.

Poster Size

The poster board assigned to each presenter is 2.5 m in height (H) by 1m in width (W). Only one board will be assigned for each poster presentation. The recommended size of poster is A0 Size – 1189mm (H) by 841mm (W) in portrait orientation.

Poster Display and Presentation

<table>
<thead>
<tr>
<th>Poster N°</th>
<th>Day Assigned</th>
<th>Mounting¹</th>
<th>Display²</th>
<th>Presentation³</th>
<th>Dismantling⁴</th>
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<td>P100 - P172</td>
<td>Friday, Dec 13</td>
<td>08:30-09:00</td>
<td>09:00-18:00</td>
<td>13:30-14:30</td>
<td>17:00-18:00</td>
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<tr>
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<td>09:00-18:00</td>
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<tr>
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<td>09:00-16:30</td>
<td>13:30-14:30</td>
<td>15:00-16:30</td>
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</tbody>
</table>

¹ Mounting: Mounting material will be available at the Poster Help Desk and/or on the
² Display: Posters should be displayed according to your assigned poster number on
³ Poster Presentation Schedule: All authors are kindly requested to be present at their posters.

From: IOF 2013 Abs <Iofhongkong2013.abs@mci-group.com>
Date: September 20, 2013, 12:53:16 AM GMT+08:00
To: "noorzairin@gmail.com" <noorzairin@gmail.com>
Subject: IOF Hong Kong - Abstract acceptance - Poster
Posters need to be dismantled after the last Afternoon Coffee Break of assigned day. The Meeting Organizers take no responsibility for posters which are not dismantled on time.

Should you have any queries, please do not hesitate to contact Maybo Fok (iofhongkong2013@icc.com.hk).

**Important Note**
Presenting authors of accepted abstracts are required to be registered delegates and be responsible for all expenses incurred in the production of their presentations, travel and accommodation during the Meeting.

IOF thanks you for your valuable contribution to the IOF Regionals – 4th Asia-Pacific Osteoporosis Meeting’s scientific programme.

We look forward to seeing you in Hong Kong!

With kindest regards,

Cyrus Cooper  
Meeting Co-Chair  
Scientific Committee

Tai-Pang Ip  
Meeting Co-Chair  
Scientific Committee