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Effect of estrogen deficiency on loaded and non-loaded area of temporomandibular or knee joint

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Low level of estrogen has regarded as a main contributing factor of temporomandibular joint (TMJ) arthritis in young women patients. However, there is lack of evidence about the occurrence of arthritis in knee joint (KJ) related with estrogen deficiency. This study aimed to investigate the effect of estrogen deficiency on the loaded and non-loaded bone area of TMJ or KJ. Total of 21 SD rats were allocated into three groups, the sham surgery group, the ovariectomy (OVX) group and the estrogen replacement group following OVX. At 12 weeks after OVX, all groups were scarified and changes in the bone area of KJ and TMJ were analyzed using micro-CT. We analyzed the bone areas in TMJ and KJ, which were compartmentalized into three areas on loaded, middle and non-loaded area. Bone mineral density (BMD) and three-dimensional micro-CT parameters were compared between TMJ and KJ. Non-loaded area of TMJ showed significant decreases of bone volume fraction (BV/TV) and BMD in OVX rats, which was recovered with the estrogen replacement. However, there was no difference in BV and BMD either in loaded area of TMJ or in all areas of KJ in both loaded and non-loaded OVX rats. Middle area of TMJ in OVX rats showed a significant decrease in BV/TV, but no difference in BMD. These results revealed that OVX-mediated estrogen deficiency led to a significant decrease of bone formation and quality in non-loaded bone area of TMJ and no influence on bone area of KJ, suggesting that TMJ is more sensitive to estrogen deficiency.

Biography

Hoon Joo Yang has been graduated from School of Dentistry, Seoul National University as Dentist, with the specialties including Oral and Maxillofacial Surgery from Seoul National University Dental Hospital. Later she received her PhD from Seoul National University on the subject of 'Progressive condylar resorption' and started to work at Seoul National University Dental Hospital. Presently she has been working in Seoul.

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