<SPECIAL LECTURE I>

[redacted] Sung-Sam Lee (Professor, Seoul National University) 13:30-14:30 (Room 401)

Mechanism on the development of periapical lesion - Effect of whole-body diseases on the development of periradicular lesions in rats

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Apical periodontitis is inflammation of the periodontium caused by infection of the pulp canal system. Moreover, a dental periradicular lesion occurs as a periradicular tissue reaction to bacterial infection and consists of periradicular inflammation with alveolar bone destruction and root resorption, a consequence of the interaction between oral flora and the existing host defenses. Many investigations dealing with the pathogenesis and history of periradicular lesions have described histologically, immunologically, biochemically the development of the periradicular lesion; but none of these studies have shown any correlation between this lesion and several factors, the whole body disease in the worldwide. In this presentation, we describe in particular the effect of osteoporosis induced by ovariectomy on experimental periradicular lesions in rats and that of high sugar intake on the development of them in rats with type-2 diabetes.

In this study, osteoporosis model rats and type-2 diabetic model rats were used. The pulp of the left mandibular first molar was exposed, and the animals were then killed 2 or 4 weeks after pulpal exposure. Tereafter the periradicular lesions were investigated histologically, histometrically, and immunohistochemically. The results showed that at both 2 and 4 weeks after pulp exposure, the alveolar bone resorption was more severe and the periradicular lesions were larger in diabetic rats and in osteoporotic rats than in the control animals. These findings suggest that whole body diseases enhance the development of periradicular lesions in rats. In fact, diabetes and osteoporosis in humans have been consistently associated with altered calcium homeostasis and bone loss. This calcium imbalance and reduced bone turnover may also explain why the periradicular lesions were severe in the diabetic rats and osteoporotic ones.