World Academy of Science, Engineering and Technology
International Journal of Medical and Health Sciences
Vol:17, No:09, 2023

# The Change in the Temporomandibular Joint Bone in Osteoarthritis Induced Mice

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**Abstract :** Osteoarthritis is a musculoskeletal and neuromuscular abnormality, masticatory muscle, and other tissue that causes pain and breaks down the articular surface of the temporomandibular joint (TMJ). The aim of this study is to investigate the change in the mandibular condyle, in terms of thickness and porosity, and osteoclast marker in the mandibular condyle of TMJ induced osteoarthritis mice (TMJ-OA mice). We investigated the bony changes in the TMJ structure of a complete Freund adjuvant (CFA)-injected TMJ in a mice model over 28 days. On day 28, we observed any change in the TMJ by a micro computed tomography scan (micro-CT scan) in the parameters of trabecular microarchitecture. Then we studied the thickness of the condyles by hematoxylin and eosin staining. Moreover, we calculated the area around the TMJ's condylar head containing the osteoclast expression by TRAP (Tartrate-resistant acid phosphatase) immunohistochemistry staining. The result found that the parameter of a micro-CT scan was no different from microarchitecture in the TMJ compared with the control group; however, mandibular condyles of the TMJ-OA group was significantly thinner than the control groups, and the osteoclast expression significantly increased in the TMJ-OA group. Therefore, our findings suggest that CFA-induced TMJ-OA represents an expression of osteoclast mandibular condyle of the TMJ, which is the proposed mechanism for a TMJ-OA model.

**Keywords :** condyle, osteoarthritis, osteoclast, temporomandibular joint
**Conference Title :** ICOBRD 2023 : International Conference on Oral Biology and Restorative Dentistry
**Conference Location :** Zurich, Switzerland
**Conference Dates :** September 11-12, 2023