

Unilateral Occlusal Reduction Induces Decreasing Articular Cartilage Thickness of Temporomandibular Joint (TMJ)



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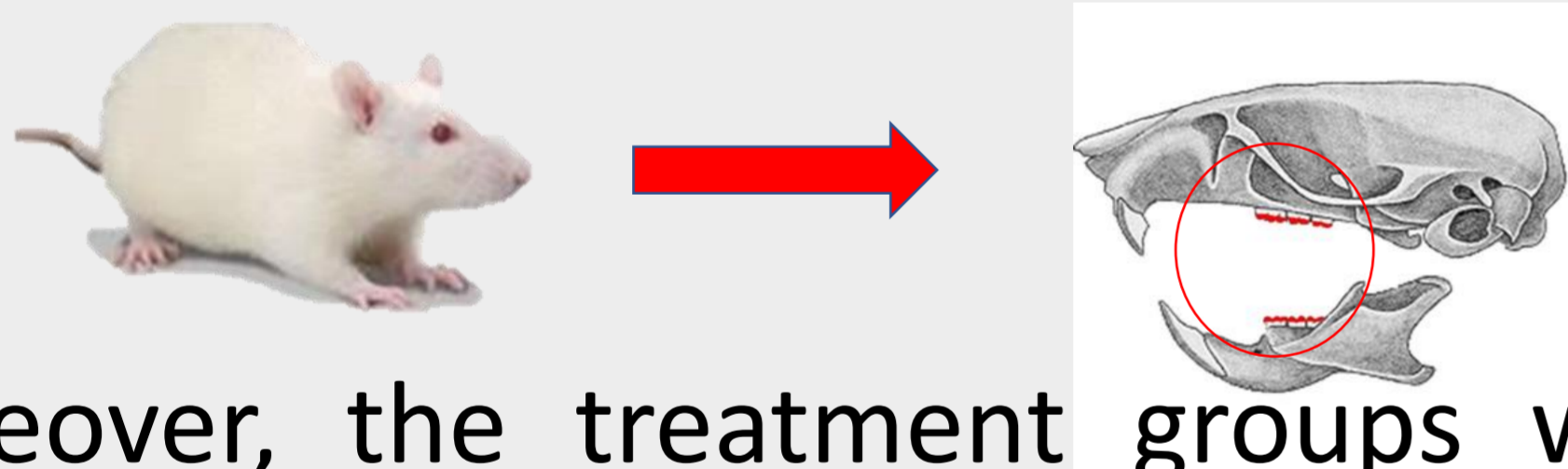
Introduction

Unilateral occlusal reduction causes premature contact of the teeth. As a result of premature contact could be change the functional movement of the jaw, so that the occlusion becomes unbalanced¹. Unbalance occlusion increasing the mechanical overloading on the temporomandibular joint.

Mechanical overloading on TMJ could be induces articular cartilage damage of the TMJ articular cartilage^{1,2}.

Methods

Twenty Wistar rats (*Rattus norvegicus*) were divided into a control group and treatment groups. The treatment group showed by occlusal reduction of the right molar in mandible and maxillary, while the control group presented no occlusal reductions.



Moreover, the treatment groups were decapitated based on the 7, 14, and 21 days of observation periods. Histological examination was performed to determine the thickness of TMJ articular cartilage. The data analyzed by using independent t-test to see the differences between each research group.

Results

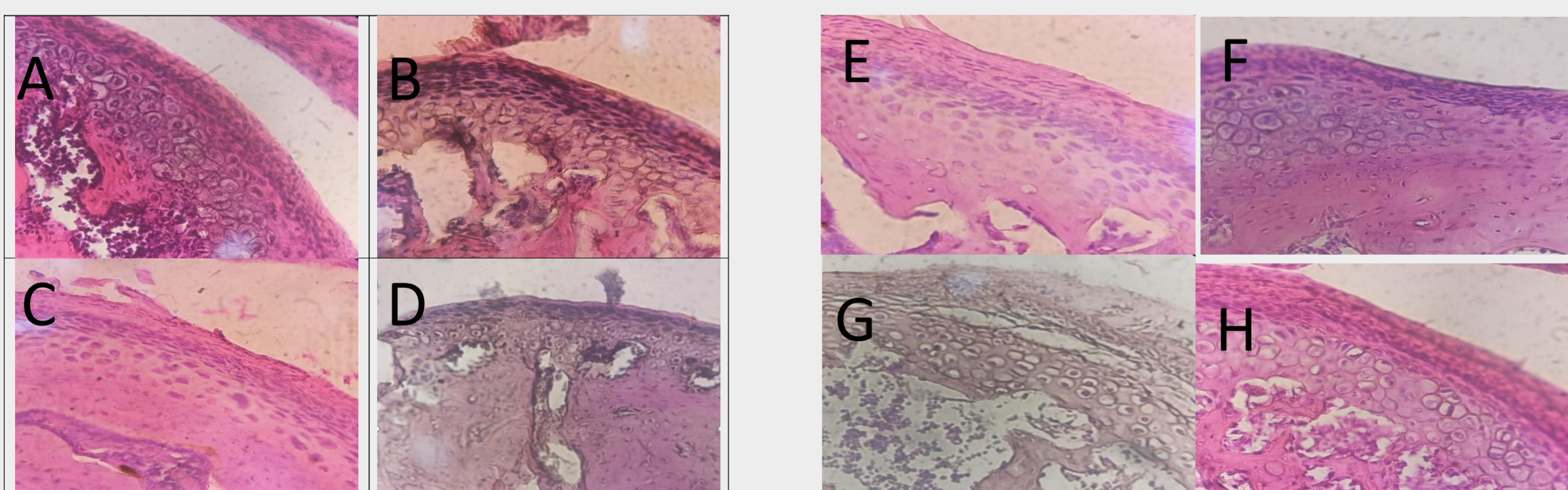


Fig 1. The differences of left side articular cartilage thickness between control group (A) and treatment group (B,C,D) and right side articular cartilage between control group (E) and treatment group (F, G, H). (400x)

Histological examinations show that the control group have a good and thick shape of the articular cartilage and the treatment group (left and right) showed a thin and severed articular cartilage layer.

Independent t test showed a significant difference in the thickness of the TMJ articular cartilage between the control and treatment groups in left side ($p < 0.05$).

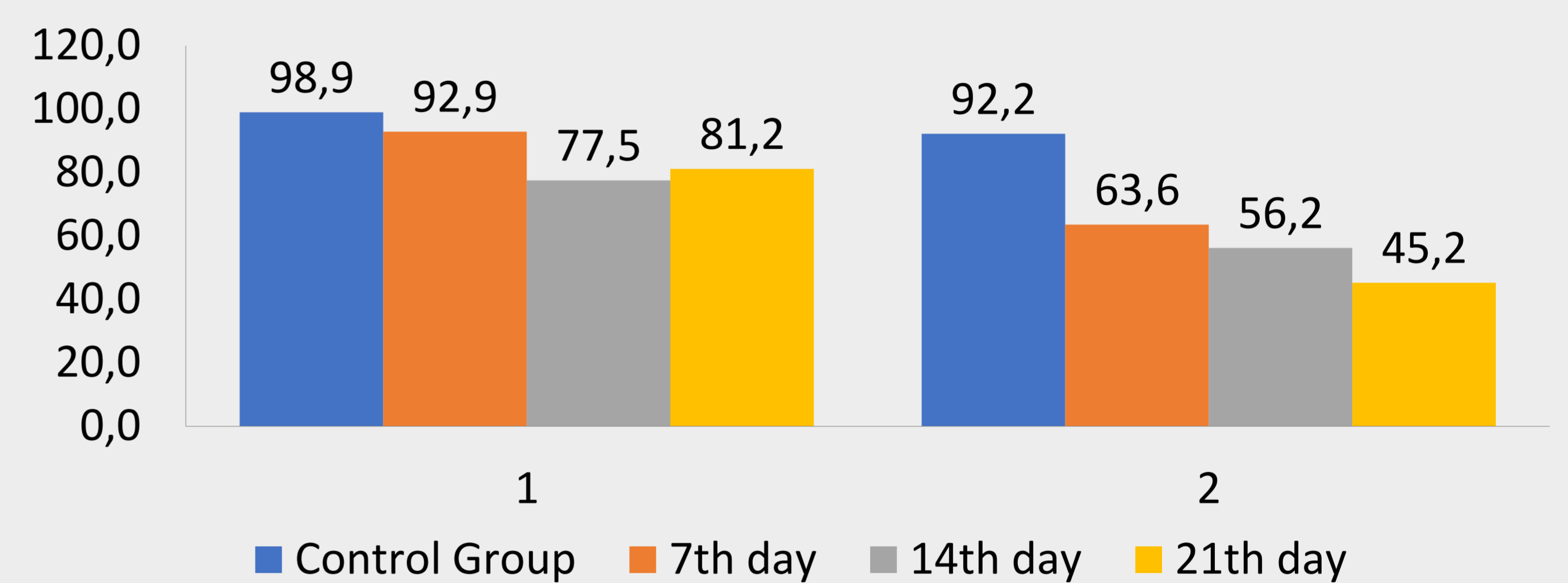


Fig.2 The differences of TMJ articular cartilage thickness (μm) between control group and treatment group (1: right side; 2: left side).

Discussion

Mechanical overloading caused by unilateral occlusal reduction induce inflammatory reactions and cell damage³. It could be releasing pro inflammatory cytokines and degradation enzyme and degrades the extracellular matrik in articular cartilage⁴

Conclusion

Unilateral occlusal reduction could be decreasing the articular cartilage thickness in TMJ. The articular cartilage thickness on the right side was thicker than the left side shown in the treatment groups on day 14 and day 21.

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