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The value of 3 Tesla magnetic resonance imaging in assessment of clinically diagnosed of temporomandibular joint disorders

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By

Zeinab Ghadhanfer Hammod

B.D.S., H.D.D.

Department of Oral Diagnosis

Supervised by

Assistant Professor

Dr. Lamia Hamid Al-Nakib

B.D.S., M.Sc. in Oral Radiology

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Abstract

Background: Temporomandibular joint disorder (TMD) is a general term that describe wide variety of conditions that include myogenic pain, internal derangement, arthritic problem, ankylosis of the joint and growth disorders. Clinical alterations which mostly affect the temporomandibular joint (TMJ) and the structures that related to it, are the articular disc and / or the masticatory muscles. The truth that the lateral pterygoid muscle (LPM) and the symptoms which related to it, play an important role in temporomandibular internal derangement is widely recognized. Internal derangement is largely involves the function of the articular disc. Anterior disc displacement is one of the major findings in TMJ internal derangement. Anterior disc displacement with reduction and anterior disc displacement without reduction are the two most common forms of TMJ disc displacement, while posterior displacement is rare. Magnetic resonance imaging is the most powerful tool to evaluate the changes in the lateral pterygoid muscle and the articular structure.

The aims of study: was to evaluate the value of 3 Tesla magnetic resonance imaging in assessment of lateral pterygoid muscle thickness , articular disc position and configuration in different TMJ MRI protocols in patients with internal derangement of temporomandibular joint and to evaluate the correlations of these MRI findings with the clinical signs and symptoms.

Subjects, materials and methods: A total forty six (30 study and 16 control) participants aged between 18 and 49 years, were recruited for this study. The participants were attended Oral and Maxillofacial Surgery Department in AL-Yarmouk Teaching Hospital that were referred to clinic of Radiology for MRI. Those with temporomandibular joint internal derangement were included on the study and were examined according to Helkimo anamnestic index (questionnaire for anamnesis) and clinical dysfunction index scoring criteria which include clinical examinations of the rate of mandibular mobility, impaired TMJ function, muscle tenderness , TMJ tenderness and tenderness during mandibular movement.

3T magnetic resonance imaging was used to measure lateral pterygoid muscle thickness, disc position and disc configuration and comparing these findings with Helkimo anamnestic and clinical dysfunction scoring of temporomandibular joint disorders that were utilized in this study.

Results: There is statistically high significant difference between Helkimo anamnestic and clinical dysfunction indices in the cases group (with temporomandibular joint disorders) and controls group with MRI findings of lateral pterygoid muscle thickness ,disc position and disc configuration ,that as the severity of indices increased, there were an increase in thickness of lateral pterygoid muscle, progression of disc displacement and disc deformity score and shows positive association expressed by significant probability (p) value.

Conclusion: This study demonstrates that there is significant correlation between clinical signs and symptoms and MRI findings of lateral pterygoid muscle thickness, disc position and configuration in patients with internal derangement of temporomandibular joint.