تقييم تأثير مضادات الإلتهاب و الماكروليد و مشتقات الكورتيزون بإستخدام الغسيل المفصلي في الخلل الداخلي

رسالة

توطئة للحصول على درجة الماجستير فى جراحة الفم و الوجه و الفكين

مقدمة من الطبيب/**محمود محمد محمود أبو الفرج**

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Evaluation of the anti-inflammatory effect of Macrolides and Corticosteroids by arthrocentesis in internal disc derangement

تقييم تأثير مضادات الإلتهاب و الماكروليد و مشتقات الكورتيزون بإستخدام الغسيل المفصلي في الخلل الداخلي

A Thesis Submitted to Faculty of Dental Medicine Cairo University, for Partial Fulfillment of Master Degree in Oral and Maxillofacial Surgery

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يَرْفَعِ اللَّهُ الَّذِينَ آمَنُوا مِنكُمْ وَالَّذِينَ أُوتُوا الْعِلْمَ

دَرَجَاتٍ

صدق الله العظيم

من الآية (١١) سورة المجادلة

Abstract

Evaluation of the anti-inflammatory effect of Macrolides and Corticosteroids by arthrocentesis in internal disc derangement.

Internal derangement is one of the most common disorders of the TMJ, the most common of which are the anterior disc displacement, pain and locked jaw at different degrees. **Objective:** to evaluate Macrolides could be an alternative drug to corticosteroids in the treatment of aseptic inflammation of TMJ internal derangement type III (disc displacement without reduction) using arthrocentesis with hydraulic distension and MRI. **Methods:** 12 patients with limited mouth opening caused by anterior disc displacement without reduction were treated by using TMJ arthrocentesis and lavage. they were divided into two groups each consists of 6 consecutive TMJ pain patients. Arthrocentesis was performed to the first group as regular by using corticosteroids while Macrolides are used to the second group. Clinical data including Maximal mouth opening and decrease the intensity of pain on a visual analogue scale were recorded. **Results:** showed that Macrolide antibiotic have a therapeutic improvement effect with TMJ arthrocentesis when used as a post-lavage anti-inflammatory drug achieving same results recorded in literature for that achieved with other drugs as corticosteroids. No changes were detected in post-operative MRI.

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Introduction

Temporomandibular joint (TMJ) disorder (TMD) is a term that encompasses a number of overlapping conditions. It occurs in approximately 10% of the population, with a predisposition to younger females. Many millions of dollars are spent every year on its diagnosis and treatment.[1]

Internal derangement (ID) of the temporomandibular joint (TMJ) refers to an abnormal positional relationship of the articular disc to the condyle and the articular eminence. ID is classified into two main subgroups: anterior disc displacement with reduction (ADDR) and anterior disc displacement without reduction (ADDWR).[2-4]

Closed lock of the temporomandibular joint (TMJ) is considered a consequence of a nonreducing deformed disc acting as an obstacle to the sliding condylar head.[5] Clinical signs of this condition are restriction of translatory movements, absence of clicking, deviation in opening the mouth toward the affected side, limitation in lateral movement toward the controlateral side, and restriction in protrusive movements, with the mandible shifting toward the affected side. Pain is present on palpation and during opening movements. Traditionally, on magnetic resonance imaging (MRI) closed lock appears as an anterior disc displacement without reduction (ADDWR).

Nitzan et al. proposed the "anchored disc phenomenon" as etiology for closed lock[6-8] suggesting to consider it as an independent entity from a nonreducible anteriorly displaced disc. The particular MRI appearance of this entity is a disc fixed to the glenoid fossa (static or stuck disc).

Instead, it was proposed that closed lock was a result of reversible restriction in gliding movements of the disc caused by its adherence to the fossa. Such adherence may arise from a number of possibilities. A vacuum effect or alteration in synovial fluid consistency are just a few possible causes that may create the environment for a suction effect of the disc to the fossa, restricting gliding movements and therefore resulting in limited mouth opening.[9]

Arthrocentesis and hydraulic distension of the TMJ has been described as an effective modality in decreasing joint pain and increasing the range of mouth opening in patients with closed lock of the TMJ.[10-12] Success rates for TMJ arthrocentesis in closed lock, as reported in literature, have varied from 70% to 95%.[8,12-14] The effectiveness of joint lavage in those cases may be explained by the joint space expansion achieved with the introduction of fluid and by the washing out of inflammatory mediators and catabolytes.

Studies comparing the pre- and postoperative imaging status of patients treated with arthroscopic lysis and lavage have demonstrated that the improvement of disc position was rare but possible.[15-18]

The effect of arthrocentesis on inflammation has been reported by Swift et al[10] In a rabbit inllammation model, they showed that lavage of the superior joint space exerted some of its treatment effects via its ability to effectively remove inflammatory mediators such as bradykinin and the prostaglandins. They further showed that introduction of systemic or local steroids decreased the inflammatory component.

The primary clinical indication of corticosteroids is synovitis that is not infectious and poorly responsive to NSAIDs. Steroids have also been

used to reduce myositis.[21] Corticosteroids have a strong anti-inflammatory effect, but they have many side effects, such as gastric disturbance, hemorrhage tendency, renal impairment, teratogenic effect, suppression of the inflammatory, electrolyte imbalance, hypertension, osteoporosis, and hormonal suppression.[21]

Macrolides have been used for the treatment of infectious diseases in clinical medicine. EM is a well-known macrolide antibiotic and exerts an antibacterial activity by inhibiting bacterial protein synthesis via reversibly binding to the 50S ribosomal subunit of bacteria. It is active against Staphylococcus aureus, Streptococcus pyogenes, Hemophilus influenza, Streptococcus viridans and Streptococcus pneumonia.[21]

Apart from their antibacterial activity, these agents exhibit a broad spectrum of pharmacologic effects including anti-inflammatory activity in humans and animals. Macrolides affect several pathways of an inflammatory process such as the migration of neutrophils, oxidative burst in phagocytes, and production of proinflammatory cytokines.[22]

The purpose of the present study is to investigate whether Macrolides could be an effective and alternative drug to corticosteroids in the treatment of aseptic inflammation of TMJ internal derangement type III (disc displacement without reduction) using arthrocentesis because corticosteroids administration has many side effects

Review of Literature

The Use of Arthrocentesis in TMJ:

Arthrocentesis, by definition, refers to the aspiration of fluid from a joint space and injection of a therapeutic substance. The orthopedic literature includes its use for the symptomatic relief of pain in patients with traumatic synovitis, hemarthrosis, the arthritides, pseudogout, lupus erythematosus, and septic arthritis.[23] Development of arthrocentesis for the TMJ was a natural consequence of the success with arthroscopic lysis and lavage for the treatment of limited mandibular movement.[18,24,25] Hydraulic pumping procedures described by Murakami and popularized by Nitzan have also won a place in the therapeutic management of TMD.[17,26,27] TMJ arthrocentesis is understood to include lavage of the upper joint space, hydraulic pressure and manipulation to release adhesions, or the "anchored disc phenomenon"[8] or the suction-cup effect[18] and improve motion, and the therapeutic injection of a steroid.[11,12,28]

Arthrocentesis also adapts well to the research environment. Aspirated fluid from the joint can be analyzed macroscopically, microscopically, and with biochemical assays to determine possible causes and effects of internal TMJ dysfunction.[19,29,30] The effect of arthrocentesis on inflammation has been reported by Swift et al[19] In a rabbit inflammation model, they showed that lavage of the superior joint space exerted some of its treatment effects via its ability to effectively remove inflammatory mediators such as bradykinin and the prostaglandins. They further showed that introduction of systemic or local steroids decreased the inflammatory component. Zardeneta et al[30] have