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Clinical Paper
TMJ Disorders

A cohort study of patients with juvenile idiopathic arthritis and arthritis of the temporomandibular joint: outcome of arthrocentesis with and without the use of steroids

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Abstract. The purpose of this study was to evaluate the effects of intra-articular temporomandibular joint (TMJ) treatment in patients with juvenile idiopathic arthritis (JIA). The inclusion criteria were met by 21 patients (38 joints). Joints were randomly selected for either arthrocentesis alone ($n = 17$) or arthrocentesis with the additional use of triamcinolone hexacetonide ($n = 21$) using a closed single-needle system. Measurements of pain and function were performed at baseline and at follow-up after 3 and 8 months. Pain on opening and lateral excursion improved significantly after injections. Pain decreased significantly from baseline to first and second control on a visual analogue scale (VAS) for overall pain (49–18–8) and overall function (41–19–4). Significant improvement was recorded for pain on palpation of muscles and joints. There was no statistically significant difference between the treatment modalities, with or without glucocorticoid injection. Arthrocentesis in the TMJ treatment of patients with JIA may be beneficial and steroids had no additional effect. Further studies are needed to evaluate the long-term effects on the TMJ structures and on condylar growth from arthrocentesis and intra-articular steroid injections.

Key words: arthritis; arthrocentesis; intra-articular injections; JIA; steroids; TMJ.

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Juvenile idiopathic arthritis (JIA) is a broad term that describes a clinically heterogeneous group of inflammatory joint diseases of unknown cause, with an onset before 16 years of age. The revised International League of Associations for Rheumatology (ILAR) classification criteria include seven JIA subtypes.[1]

Chronic temporomandibular joint (TMJ) arthritis in children was first reported by Still in 1897.[2] Micrognathia has been reported in approximately 30%

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of children with JIA and malocclusion in approximately 65%,[3,4] and the disease appears to be most prominent in early adolescence.[5] Other clinical problems reported are headache, facial pain, trismus, and tooth clenching.[6] In two studies, one by Larheim and Haanaes in 1981[7] and the other by Larheim et al. in 1982,[8] as many as 69% of children with radiological evidence of TMJ damage were found to be asymptomatic. These data are supported by more recent publications.[9,10] In a recent publication by Arvidsson et al.,[11] 53% of the patients showed progression of radiographic TMJ changes 27 years after the first examination.

The treatment of JIA consists of a combination of systemic medication; in Norway, this is most often non-steroidal anti-inflammatory drugs (NSAIDs), methotrexate (MTX), etanercept, and anakinra and local injections with corticosteroids. Local treatment with corticosteroids in the TMJ in children with JIA has been reported to be safe and reliable,[12–15] but as shown by Stoustrup et al.,[16] there is a need for well-designed evidence-based studies before general conclusions can be drawn with regard to the efficacy and safety of intra-articular corticosteroid injections.

The purpose of this study was to evaluate the effects of intra-articular TMJ treatment in patients with JIA using a prospective design. All patients had been diagnosed with JIA and TMJ arthritis. Each joint was randomly allocated either to treatment with arthrocentesis alone (treatment A), or to arthrocentesis and a glucocorticoid injection (triamcinolone hexacetonide 20 mg/ml, 0.5 ml) (treatment B). The effect of the treatment was evaluated twice, at 3 and 8 months after the initial injection, based on the following outcome measures: pain intensity, pain localization, joint sounds, mandibular function, and presence of complications.

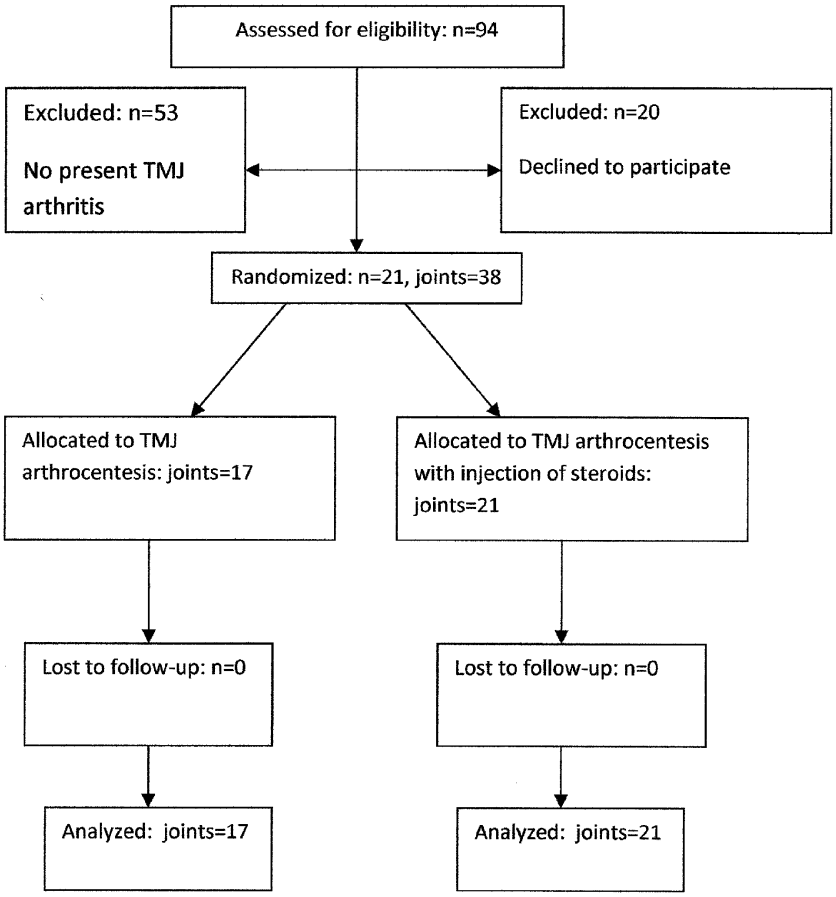

Fig. 1. Flowchart and distribution of patients (*n*) with JIA selected for TMJ treatment with arthrocentesis with or without the use of steroids.

Materials and methods

Patients

All patients were recruited at the same university hospital. Twenty-one persons (including 38 joints) were included in the study from patients admitted to the hospital for the medical and/or surgical treatment of JIA. A flow diagram showing the study selection procedure is presented in Fig. 1.

Inclusion criteria were JIA, TMJ arthritis on magnetic resonance imaging (MRI; with contrast, T1- and T2-weighted), and two or more of the following criteria: pain localized to the TMJ, reduced maximal incisal opening (MIO), and synovitis of one or both TMJs diagnosed on MRI and ultrasound or MRI alone. The patients ($n = 21$; mean age 11.4 years, range 6–18 years, five aged $\geq$13 years; six boys and 15 girls) had the following JIA subtypes according to the ILAR classification criteria: oligoarthritis ($n = 10$), polyarthritis ($n = 10$), and systemic arthritis ($n = 1$). Exclusion criteria were the following: absence of TMJ arthritis, normal TMJ function, and no TMJ pain. The mean duration of JIA was 5.1 years, with a range of 0.25–15 years, equally distributed with regard to sex and JIA subclasses. The duration of symptoms of the TMJ was shorter than the duration of the JIA diagnosis (mean 2.1 years, range 0.1–14 years). Only one patient had TMJ symptoms and onset of general joint symptoms at the same time. The most commonly used medications were MTX (14 patients) and NSAIDs (12 patients, all ibuprofen). Seven patients used a combination of NSAIDs and MTX. Four were on glucocorticoids and one patient was taking a tumour necrosis factor alpha (TNF-α) inhibitor. Medications did not change during the study.

Synovitis in the TMJ was diagnosed using ultrasound and MRI or MRI alone in all patients, unilaterally in three. Findings suggesting long-standing arthritis, such as changes in the size and borders of the condyle, were found in 14 cases, and oedema in 13 patients. Previous TMJ treatment was recorded in two patients, both of whom had received a single intra-articular injection with betamethasone more than a year earlier.

Methods

All participants were examined prior to arthrocentesis. The clinical examination of the TMJ included palpation of the lateral parts of the TMJ in closed and open position and measurements of function, lateral excursion, protrusion, and mouth opening. Mouth opening was recorded in two ways: (1) at the first point of (increased) pain (PIO, pain incisal opening), and (2) MIO. The clinical examination also included joint sounds, pain