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ORIGINAL RESEARCH

MRI ASSESSMENT TMJ AMONG PATIENTS WITH JUVENILE IDIOPATHIC ARTHRITIS (JIA)

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ABSTRACT

Background: The present study was conducted for assessing MRI findings of TMJ among patients with juvenile idiopathic arthritis (JIA).

Materials & methods: A total of 20 patients with JIA were enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and complete clinical and medical history of all the patients was recorded. Patients with history of any other systemic illness, any known drug allergy were excluded from the present study. All the subjects were informed about MRI protocols. MRI of TMJ was done.

Results: While assessing the TMJ by MRI, inflammation and bone marrow oedema was seen in 70 percent and 25 percent of the patients. Bone marrow enhancement and joint effusion were seen in 20 percent of the patients each.Erosion of osseous component was seen in 65 percent of the patients while condylar flattening and temporal bone flattening were seen in 50 percent and 40 percent of the patients.

Conclusion: Early detection and treatment of TMJ arthritis are paramount to preserving motility and preventing deformity.

Key words: Magnetic resonance imaging, Juvenile idiopathic arthritis

INTRODUCTION

Juvenile idiopathic arthritis (JIA) is a heterogeneous group of idiopathic inflammatory arthritis affecting children younger than 16 years of age and lasting six weeks or longer. The terminology of chronic arthritis in children has evolved from juvenile chronic arthritis (JCA)

and juvenile rheumatoid arthritis (JRA) to JIA since 1995. According to the consensus conference of the International League of Associations for Rheumatology (ILAR) in 2001, there are seven JIA categories: a) oligoarthritis; b) rheumatoid factor (RF) positive polyarthritis; c) RF negative polyarthritis; d) systemic arthritis; e) psoriatic arthritis; f) enthesitis-related arthritis; g) undifferentiated arthritis. The roles of microorganisms such as Parvovirus B19, Epstein-Barr virus, enteric bacteria, Chlamydophila pneumoniae, and streptococcal infections are still inconclusive.[1- 3]

It is a heterogeneous group of conditions which encompasses all forms of arthritis of unknown etiology lasting for at least 6 weeks and with onset before the age of 16 years. As a result of the lack of pathognomonic features, the diagnosis of JIA is one of exclusion among all possible causes of chronic arthritis in childhood. In India, Mexico, and Canada, a greater incidence of enthesitis-related arthritis (ERA) has been registered, reflecting, at least in part, the high frequency of the human leukocyte antigen (HLA)-B27 in these populations. Rheumatoid factor (RF)-positive polyarthritis is the less common subtype. Distinct distributions of age at onset and sex characterize each onset type. Broader insights into the worldwide variability of JIA phenotypes will come out of the multinational study of the EPidemiology, treatment and Outcome of Childhood Arthritis (EPOCA Study), which has enrolled thus far around 9000 patients from 42 countries in five continents.[4- 6] Hence; the present study was conducted for assessing MRI findings of TMJ among patients with juvenile idiopathic arthritis (JIA).

MATERIALS & METHODS

The present study was conducted for assessing MRI findings of TMJ among patients with juvenile idiopathic arthritis (JIA). A total of 20 patients with JIA were enrolled. Complete demographic and clinical details of all the patients was obtained. A Performa was made and complete clinical and medical history of all the patients was recorded. Patients with history of any other systemic illness, any known drug allergy were excluded from the present study. All the subjects were informed about MRI protocols. MRI of TMJ was done. All the findings were recorded and analysed using SPSS software.

RESULTS

Mean age of the patients was 12.9 years. Majority proportion of subjects were males. While assessing the TMJ by MRI, inflammation and bone marrow oedema was seen in 70 percent and 25 percent of the patients. Bone marrow enhancement and joint effusion were seen in 20 percent of the patients each.Synovial thickening and joint enhancement were seen in 10 percent and 40 percent of the patients respectively. Erosion of osseous component was seen in 65 percent of the patients while condylar flattening and temporal bone flattening were seen in 50 percent and 40 percent of the patients.

Table 1: Demographic variables

Variable	Number	Percentage
Males	12	60
Females	8	40
Mean age (years)	12.9	

Table 2: MRI findings

MRI inflammation	Number	Percentage
Inflammation present	14	70
Bone marrow oedema	5	25
Bone marrow enhancement	4	20
Joint effusion	4	20
Synovial thickening	2	10
Joint enhancement	8	40
Erosion of osseous component	13	65
Condylar flattening	10	50
Temporal bone flattening	8	40

DISCUSSION

Juvenile idiopathic arthritis is the most common chronic rheumatic disease of unknown aetiology in childhood and predominantly presents with peripheral arthritis. The disease is divided into several subgroups, according to demographic characteristics, clinical features, treatment modalities and disease prognosis. Systemic juvenile idiopathic arthritis, which is one of the most frequent disease subtypes, is characterized by recurrent fever and rash. Oligoarticular juvenile idiopathic arthritis, common among young female patients, is usually accompanied by anti-nuclear antibodie positivity and anterior uveitis. Seropositive polyarticular juvenile idiopathic arthritis, an analogue of adult rheumatoid arthritis, is seen in less than 10% of paediatric patients. Seronegative polyarticular juvenile idiopathic arthritis, an entity more specific for childhood, appears with widespread large- and small-joint involvement. Enthesitis-related arthritis is a separate disease subtype, characterized by enthesitis and asymmetric lower-extremity arthritis. This disease subtype represents the childhood form of adult spondyloarthropathies, with human leukocyte antigen-B27 positivity and uveitis but commonly without axial skeleton involvement. Juvenile psoriatic arthritis is characterized by a psoriatic rash, accompanied by arthritis, nail pitting and dactylitis.[7- 10] Hence; the present study was conducted for assessing MRI findings of TMJ among patients with juvenile idiopathic arthritis (JIA).

Mean age of the patients was 12.9 years. Majority proportion of subjects were males. While assessing the TMJ by MRI, inflammation and bone marrow oedema was seen in 70 percent and 25 percent of the patients. Bone marrow enhancement and joint effusion were seen in 20 percent of the patients each.Synovial thickening and joint enhancement were seen in 10 percent and 40 percent of the patients respectively. Children with JIA and completely normal findings on the MRI of the TMJ generally do not warrant further investigations unless signs or symptoms of TMJ arthritis develop. In children with mild findings of active arthritis, e.g. effusions or areas of enhancement < 1.5 mm with or without mild bone marrow edema, we recommend repeating the MRI within one year, as these can be normal findings. These mild changes can be observed in non-arthritic pediatric subjects, but this does not necessarily mean that it is a negative study. Cross-sectional studies using plain radiography clearly demonstrate TMJ changes in at least 40% of JIA patients, so the pre-test probability of TMJ arthritis is

considerably higher in a JIA patient than in a non-arthritic control. If the findings do not progress over one year, then subsequent imaging studies may not be required.[11, 12]

In the present study, erosion of osseous component was seen in 65 percent of the patients while condylar flattening and temporal bone flattening were seen in 50 percent and 40 percent of the patients. Alqanatish JT et al described the clinical and laboratory characteristic, state the treatment and outcome of patients with juvenile idiopathic arthritis (JIA), and describe temporomandibular joint (TMJ) involvement as observed in a large tertiary center. They reviewed 123 cases with different JIA subtypes (57% females). The most frequent subtype is the oligoarticular (36%). TMJ involvement was found in 16% (n=20/123) of the patients, of whom 45% had Polyarticular JIA. The rheumatoid factor was positive in 25%; antinuclear antibody (ANA) in 45% and none showed positivity to HLAB27. Treatment resulted in complete resolution in 95% of cases, while Micrognathia and obstructive sleep apnea were the complications reported in 5% of cases.TMJ involvement in JIA is not uncommon. Females with polyarticular disease were more frequently affected with TMJ arthritis.[13]Clinical examination or self-report only provides poor performance of TMJ arthritis. Therefore, the possibility of detecting real TMJ arthritis is improved by combining physical examination and the use of images. Some studies have shown a high prevalence of TMJ arthritis using MRI in early-onset JIA even among asymptomatic children. Magnetic resonance imaging in our cohort showed TMJ synovitis in 7 patients.[14- 16]

CONCLUSION

From the above results, the authors concluded that early detection and treatment of TMJ arthritis are paramount to preserving motility and preventing deformity.

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