

Disorders of Osseous Structure of TMJ in Children with Juvenile Idiopathic Arthritis – CBCT Study

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Introduction. The temporomandibular joint (TMJ) is frequently affected in juvenile idiopathic arthritis (JIA) leading to disturbed mandibular function and growth [Fjeld, Arvidsson et al., 2010]. TMJ arthritis is difficult to diagnose at an early stage since relatively few symptoms and clinical findings are related to this joint. The pathologic process can affect growth long before conventional radiographic changes are seen. The advantage of using cone beam computed tomography (CBCT) is an additional possibility for 3D images describing TMJ morphology and disorders [Swennen et al., 2006; Loubele et al., 2009; Davis et al., 2012].

The aim. The aim of the study is to assess osseous components of the TMJ in children with JIA by research diagnostic criteria of temporomandibular disorders (RDC/TMD) in CBCT images.

Materials and methods. CBCT images of TMJs from 26 patients (52 joints) over the age of 12 affected with JIA (mainly seronegative polyarthritis) were included in the study. Data was processed and analysed according to the software corresponding to the I-CAT Vision equipment (Imaging Sciences International, Inc. Hatfield PA, USA). Standardised protocol was used for the equipment (voltage: 120 KV, current: 38 mA, field of view: 17 cm, resolution: 0.4 voxels, radiation dose ~36 µSv, CBCT slices: 0.4 mm). Structural changes in osseous structures of the joint were assessed in sagittal and axial planes and quantified by RDC/TMD [Ahmad et al., 2009] – indeterminate osteoarthritis (IOA), and osteoarthritis (OA).

Results. The presence of TMJ destruction signs was asymmetrical between the left and right joints. In all patients TMD signs were observed: articular surface flattening (96.15%), condylar hypoplasia (13.46%), condylar surface erosion (11.54%) and deviation in the shape of the condyle (9.62%). In the mandibular fossa, flattening and subcortical sclerosis were found in a few cases. IOA was diagnosed in 53.85% of patients and OA in 46.15%.

Conclusion. Cone beam computer tomography is useful for early diagnosis of osseous structure disorders of the temporomandibular joint.

Indeterminate osteoarthritis and osteoarthritis of the temporomandibular joint are frequent diagnoses in children with juvenile idiopathic arthritis.