

Bifid Mandibular Condyle as a Manifestation of a Systemic Disease of Connective Tissue

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Abstract: Clinical case of extremely rare abnormality of temporal mandibular joint as bifid condyle of a 15 years old patient has been described. It was diagnosed for the first time during 23 years of clinical practice. This abnormality was accompanied by synovial chondromatosis of temporomandibular joint, osteoporosis, deformation coxarthrosis from the left side, pelvis bones skewness (on MRI – right femoral bone head dysplasia, pelvis ring deformation) shortening of a right lower extremity. It enables the author to consider, that bifid condyle and temporomandibular joint chondromatosis in a 15 years old patient are the manifestations of a systemic disease of connective tissue.

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1. Introduction

Bifid mandibular condyle is an extremely rare abnormality. On studying 1882 skulls on corpses that abnormality was detected in 9 cases that accounted 0, 48% [1]. However the epidemiologic data are absent, clinical observations are not numerous. In domestic literature we didn't find any information about that pathology. English literature about clinical observations is not numerous and describes only single cases. Review of English literature before 2005 year demonstrated the descriptions of 56 cases of that rare abnormality, 32 of them were detected on corpses, 24 ones were clinical observations. Moreover in 2 cases there were described 4 and 2 observations and in the rest ones there was only 1 case [2].

Aetiology of this pathology is unknown. Genetic origin is supposed to be one of the causes, but the majority of authors believe that the cause of this pathology results from trauma and infant pathology development [1]. Study of the results of condylectomy in monkeys revealed, that some changes of shape and position of articular disc may influence a bone regeneration and may cause bifurcation of mandibular condyle or a new growing condyle, because in post-operative period there are formed the intra-articular fibrous septa crossing the space where the condyle is located [3]. Clinical observations of this pathology development after mandible fracture in the condyle area are known [4,5]. A case of mandibular condyle bifurcation in 3 years old girl with temporomandibular joint (TMJ) ankylosis, at birth of whom the forceps had been used

was described [6]. There was a report about triple condyle in 25 years old woman, who had childhood trauma in the head and neck area [7]. However in the majority of cases the patients didn't have any indications to injury [8, 9, 10]. Formation of bifid mandibular condyle may be due to primary disturbances of a child development in the embryonal and post-natal period [11, 12]. It was found out that mandibular condyle cartilage of a human fetus was separated by vasculated fibrous septum almost at early stage [13]. According to the author's opinion the presence of this septum or rupture of blood vessels inside it may cause condyle bifurcation.

As a rule affection is one sided [14]. Of all 21 bifid condyles, revealed on corpses, 18 ones were one sided and only 3 ones were bilateral. [6]. Single clinical observations of bifid condyles were described by some authors [15, 10, 16, and 17].

In most cases bifurcation of mandibular condyle has asymptomatic course and it is revealed by X-ray examination [6, 4, 18, 5]. There was described the observation of a 17 years old girl with left sided microsomia and bilateral microotia. Her left sided bifid condyle had been accidentally revealed on CT image [1]. The following up interviewing a patient didn't reveal any complaints related to temporal mandibular joint. But in some cases there were described such symptoms as pain, swelling, mouth opening restriction, clicking sounds in temporal mandibular joint, headache [1, 14, 17].

Objective of a present work is to describe a case of mandibular condyle bifurcation, which is

accompanied by another diseases typical for a systemic disease of connective tissue.

Results

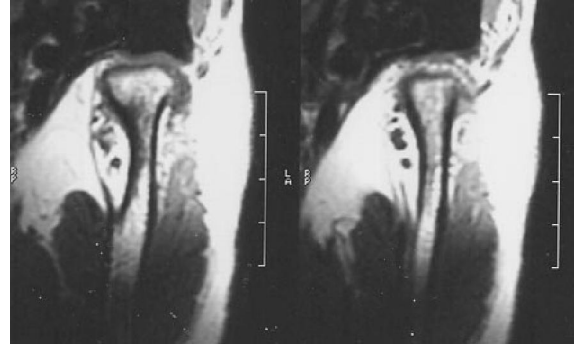
Case Report. Patient I., aged 15, had to consult a doctor- orthodontist for absence of contraindications for orthodontic treatment with using bracket system. There were complaints of incorrect mouth opening, clicking in the right temporal mandibular joint area and incorrect occlusion.

General condition of the patient was satisfactory. Skin and fauces were normal. In lungs there was vesicular respiration. Cardiac tones were clear, rhythmic. Abdomen was soft and painless. Her height was 171 cm, weight- 58 kg.

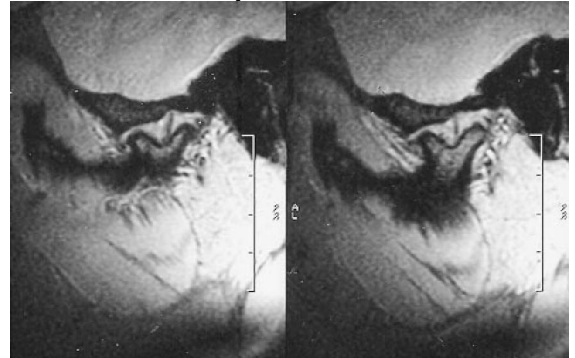
Visual vertebral diagnostics revealed symptoms of a leg shortening and scoliosis of lumber area of a spine.

Examination of the face detected chin about 1 cm shifted to a right side. Mandibule was slightly flattened from the left side as compared with the right one. On palpation of TMJ from outside the movements of articular heads were asynchronous, on mouth opening the movement of a joint head from the left side was behind the right one. On palpation from external acoustic meatus area the right articular head and its movements couldn't be detected. Palpation of a masseter, temporal, external and internal pterygoid muscles was painful in the right side. Medial inter-incisor line was not displaced. On mouth opening there was detected a sharp mandibule deviation to the right side. Deep occlusions, maxillary stenosis, palatal position of 1.2 teeth were detected. Teeth were intact. Teeth enamel was of a mat color, without brilliance.

A complex examination of the patient was carried out. The patient had to undergo MRI of TMJ. *MRI of TMJ from the right side in oblique sagittal plane of visualization with thickness of 2mm tomographic layer.* In T1 images in coronal projection a head of the right TMJ has a "saddle" shape. There are chondromatosis corpora, sized up to 2 mm in a joint cavity (Pict.1a). In T2 images in oblique sagittal projection (open mouth) a head of the right TMJ has a "saddle" shape and articular fovea is sharply flattened. There are small chondromatous corpora in a joint cavity (Pict.1b). In T2 images in oblique sagittal projection (open mouth) a head of the right temporal mandibular joint has a "saddle" shape, articular cavity of a temporal bone is sharply flattened. Inside the joint cavity there are small chondromatous corpora (Pict.1c).

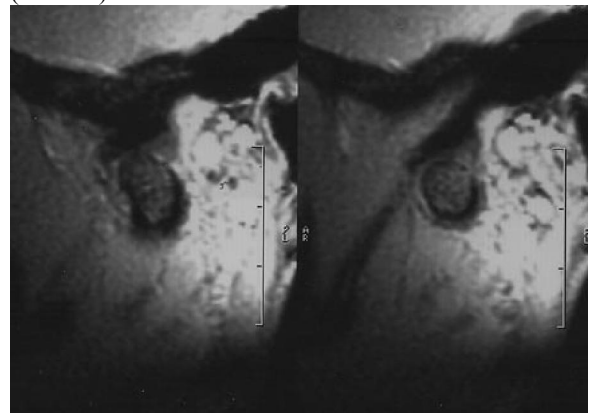


Pict.1a. In T1 images in coronal projection there were seen the 2 mm chondromatous corpora inside cavity of a right temporal mandibular joint. Articular disk is displaced outwards.



Pict.1b. In T2 images in oblique sagittal projection (open mouth) a head of the right temporal mandibular joint has a "saddle" shape, a joint cavity is sharply flattened. There are small chondromatous corpora in a joint cavity.

In T2 images of sagittal plane (open mouth) there were seen free corpora and liquid in a joint cavity (Pict. 1c).



Pict. 1c. In T2 images in sagittal projection (open mouth) there were revealed free corpora and liquid in a joint cavity.

Conclusion: MR-image confirms the development abnormality of articular head and chondromatosis of a TMJ. The left temporal mandibular joint is normal.

The existing literature dealing with this problem recommends using computer tomography(CT) for the diagnostics of osseous abnormality of joints. A patient has to undergo CT of TMJ. *CT-imaging of a right temporal mandibular joint area. (Pict.2)* Articular cavity of a temporal bone is flattened. On series of the obtained images there are marked atypical structure of a right TMJ head, which has flattened shape and crater shaped cavity in the centre.



Pic 2.On CT-imaging of the right temporal mandibular joint a head is flattened and has a cavity in the shape of crater. A joint cavity is flattened, it's surface has roughness areas, which may be classified as areas of metaplasia.

A head is located almost in the sagittal plate. A joint cavity of temporal bone is flattened, it's surface has roughness areas, which can be classified as areas of metaplasia. In the joint cavity any additional corpora are not revealed.

A left temporal mandibular joint has no peculiarities.

Conclusion: Development abnormality of the right temporal mandibular joint.

On careful anamnesis taking from the parents it was determined that delivery had a severe course and the displacement of a right shoulder joint occurred.

Taking into account the signs of a leg shortening and scoliosis of the lumbar area of the spine, revealed on visual vertebral diagnosis, the patient was recommended to consult a traumatologist.

X-Ray study of the lumbar area of the spine and coxofemoral joints. On spondylogram of the lumbar area of a spine in 2 projections there was revealed scoliosis with rotation to the left side. Vertebral height was normal. There was deformation of the pelvis ring and pubis and deformation of the left coxofemoral joint due to a head dysplasia, flattening acetabulum, height difference up to 6.5 mm from the right side (Pict. 3).



Pict 3. Spondylogram of a lumbar area of the spine (explanation in the text)

Conclusion: There is scoliosis of the lumbar area of the spine. Right femoral head dysplasia and pelvis ring deformation are visible.

A patient with the diagnosis “Deformation coxoarthrosis from the left side. Pelvis bones skewness. Right lower extremity shortening” was recommended to be under regular medical observation of a traumatologist – orthopaedist. Massage and therapeutic physical training were recommended.

Orthodontal treatment by using bracket system was planned, but it was impossible to fix brackets, because they keep detaching, despite the use of different glues. Due to that fact and because of the enamel mat surface the densitometry was recommended.

Results of densitometry: T criterion of the 3rd finger phalanx was 1.2, but T criterion on distal section of a radial bone was 3.5 (norm: +1-1).

Conclusion: Osteoporosis.

On the basis of the carried on examination the following diagnosis was made: “Development abnormality (bifid mandibular condyle), synovial chondromatosis of the right temporal mandibular joint”.

Concomitant diseases :Osteoporosis, deformation coxoarthrosis from the left side, pelvis bones skewness, a right lower extremity shortening .

Discussion

In the given study based on clinical data and MRI results a bifid mandibular condyle and chondromatosis of TMJ, which rarely affect a temporal mandibular joint were diagnosed in the 15 years old patient. [19] Computer tomography of TMJ, performed later, didn't detect any chondromatous corpora. It is probably explained by the fact that metaplasia of some cells of joint's synovial membrane, resulting in formation of intra-articular cartilaginous, rarely osseous corpuscles (in their

ossification) occur in synovial chondromatosis. In the patient, due to her young age, or, may be, because of the revealed osteoporosis and consequently mineral metabolism disturbance, the cartilaginous corpuscles ossification didn't occur, so they weren't visualized on the CT-image.

Osteoporosis, deformation coxoarthrosis from the left side, pelvis bones skewness, a right lower extremity shortening, detected on studying, enable to consider bifid mandibular condyle and temporal mandibular joint chondromatosis to be the result of a systemic disease of connecting tissue in the 15 years old patient. Severe course delivery with displacement of the right shoulder joint and, probably another factors are considered to be the etiopathogenetic factors of a connecting tissue systemic disease

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