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Dr Neera Ohri
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Mandibular condylar hyperplasia is a relatively rare condition with uncertain etiology affecting the condylar head, neck and many a times body and ramus of mandible. The condition causes facial asymmetry, deviation of the jaw, occlusal derangements and articular dysfunction. Radiographic examination plays a critical role in establishing a correct diagnosis. Bone scintigraphy scan has been found to be effective in direct assessment of condylar activity which aids in proper treatment planning. Here, we report a case of unilateral condylar hyperplasia in a 31 year old male patient which was diagnosed and corrected with the help of appropriate radiographic examination.

Key Words: Bone scintigraphy, condylar hyperplasia, facial asymmetry

Introduction

Mandibular condylar hyperplasia (CH) is a rare entity. It was first described by Robert Adams in 1836 as a condition that causes overdevelopment of the mandible, creating functional and esthetic problems. [1] Rowe defined mandibular CH as an entity that produces an asymmetry of the mandible resulting from an enlargement of one side that is not due to neoplasia or dysplasia. [2] The excessive unilateral growth of the mandibular condyle can lead to facial asymmetry, occlusal disturbance, and joint dysfunction. Prominent features include an enlarged mandibular condyle, elongated condylar neck, outward bowing, and downward growth of the body and ramus of the mandible on the affected side, causing fullness of the face on that side and flattening of the face on the contralateral side. Some patients also may present with symptoms from the temporomandibular joint (TMJ) such as pain, joint sounds, and limitation of mouth opening. [3]

Obwegeser and Makek classified the asymmetry associated with CH into 3 categories: hemimandibular elongation, with a horizontal growth vector (type 1); hemimandibular hyperplasia, with a vertical growth vector (type 2); and a combination of the 2 entities. Type 1 is

associated with chin deviation toward the contralateral side and mandibular midline deviated to the unaffected side. On the other hand, type 2 is characterized by an ipsilateral open bite or compensatory vertical over development of the maxilla on the involved side with canting of the occlusal plane. Most commonly, the mandibular midline is straight and the chin is less deviated. The third type is a combination of the other 2 types. Both types of CH have been reported to be equally prevalent in males and females, with onset during or after the period of growth. [4]

The etiology may be either congenital or acquired. According to Shafer et al, "congenital hypoplasia that is idiopathic in origin is characterized by unilateral or bilateral underdevelopment of the condyle beginning early in life." In these cases (eg, dysostosis otomandibularis), the condyle is generally small. Secondary or acquired condylar hypoplasia may be caused by local factors (trauma, infection of mandibular bone or middle ear, irradiation) or by systemic factors (infection, toxic agents, rheumatoid arthritis, mucopolysaccharidosis). In these cases, the condyle may be small, and the condition is frequently associated with

ankylosis.^[5-7] Histopathologically, widening of the fibrocartilage that covers the condyle, a wide richly vascularised proliferation zone enriched with large cells near its bony aspect, and osteoclasts in the lacunae between new trabeculae formed by the surrounding osteoblasts can be observed. In active CH, the abnormal presence of large masses of hyaline cartilage surrounding large cells and new cartilage formation also have been reported.^[8] Activity of CH is effectively demonstrated by bone scintigraphy, is strongly correlated with the histological findings, and has become an efficient tool in the differential diagnosis of facial asymmetry.^[9] Here we report a case of unilateral condylar hyperplasia in a patient which with esthetic concern to the patient, clinical features and radiographic features in detail including radionuclide scan along with diagnosis and management.

Case Report

A 31 years male patient presented in Dental OPD with chief complains of asymmetry of right side of face since 10 years. Patient first noticed asymmetry of face 10 years back which was insidious in onset. It gradually progressed to the present size. The growth had increased since one year and resulted in obvious increased vertical dimensions of face. There was no associated history of trauma or infection or associated pain. Past dental, medical or family history revealed nothing significant. Oral hygiene was proper.

General physical and systemic examination revealed nothing significant except findings on face. Facial examination revealed asymmetry of the right side of face. There was increased vertical dimensions of right middle and lower one third of face with increased ramal height. The level of inferior border of mandible on right side was at a lower level than on left with midline shift of mandible to left. (Fig.1,2,3) Temporomandibular joint examination revealed normal range of mandibular movements with normal mouth opening. No clicking and tenderness was present. Deviation of mandible to left side was present on mouth opening. Intraoral examination showed posterior open bite on right

side and posterior cross bite on left side. Anterior cross bite was present. Incisal midline was shifted to left side by 5mm. (Fig.4a,b) Occlusion could not be determined. Required lab investigations and hormonal assay (growth hormone and thyroid function test) were essentially normal.



Fig 1: Frontal view of patient



Fig. 2 Facial asymmetry in the vertical aspect

Fig. 3 Face on left side appears normal



Fig. 4(a,b) Intraoral view shows Posterior open bite on right side, Anterior cross bite and posterior cross bite on left side

Orthopantomogram/Paranomic view revealed enlarged right condyle in horizontal and vertical dimensions as compared to left. Increased right ramal height with lowered level of body of mandible of right side compared to left along with v shaped notching of symphysis. (Fig.5) CT Scan showed enlarged right condyle along with focal sclerotic and lytic areas. (Fig.6) Bone Scan showed abnormal concentration of Tc 99 MDP in right TMJ. (Fig.7) Differential diagnosis could be

Hemifacial hypertrophy and Perryromberge syndrome. After proper clinical examination and radiological finding, diagnosis of Right Mandibular Hyperplasia was made. Patient was referred to higher centre for surgical reconouring of condyle and orthodontic treatment.

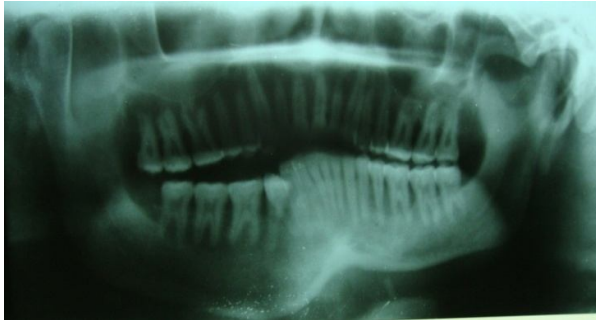


Fig. 5 Paranomic view, right condyle enlarged in horizontal and vertical dimensions compared to left. Increased right ramal height with lowered level of body of mandible of right side compared to left side

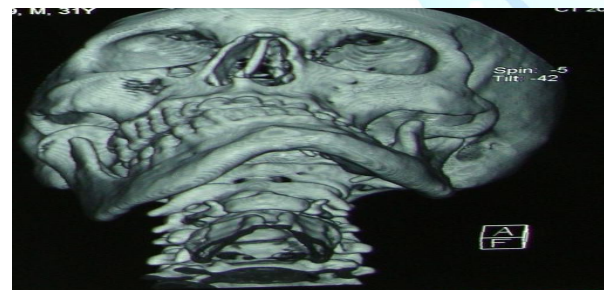
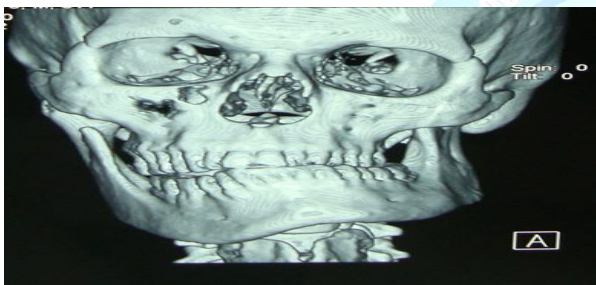


Fig. 6 CT Scan, Right condyle enlarged along with focal sclerotic and lytic areas

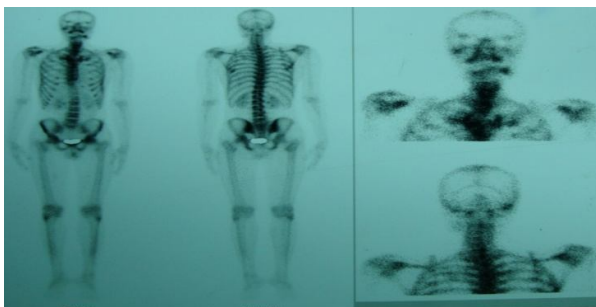


Fig.7 Bone Scan showed abnormal concentration of Tc 99 MDP in right TMJ

Discussion

According to a study conducted by Villanueva-Alcojol L et al on series of 36 patients, all had unilateral excessive growth of the mandibular condyle with concomitant occlusal disturbance and chin deviation toward the opposite side as was seen with our case. In their study type 1 was most common and combination of type 1 and 2 was least common as was with our case showing growth in both vertical and horizontal planes confirming combination type. [9] Condylar hyperplasia is a well-documented cause of facial asymmetry. [10] It is a unilateral self-limiting disease that usually develops in the teens and early 20s and sometimes after the opposite condyle has stopped growing. Growth is probably caused by persistent or resumed activity of the pre-cartilaginous cells of the condyle growth zone. [4,11] but others have suggested a change in the local growth hormone control of the cell. [7] In our patient, it could not be attributed to the hormonal variations as the patient has just crossed the puberty. Clinically facial asymmetry along with typical radiographic features help to confirm the diagnosis of condylar hyperplasia. Treatment of mandibular deformity is primarily surgical, with or without orthodontics, and consists of two types of intervention depending on the condylar activity. [12] Initial presentation is often to an orthodontist with malocclusion and mandibular asymmetry (deviation of the chin to the unaffected side). Other presentations are as dysfunction of the TMJ or primary facial asymmetry to a maxillofacial surgeon. [4, 7-8,12] . As per Obwegeser and Makek classification our case falls in type III category. Differential diagnosis that can be considered for the condition include: Hemifacial hyperplasia, condition with associated enlargement of soft tissues and teeth in relation to the associated side; In synovial chondromatosis, preauricular swelling with pain and limitation of joint function will be usually present. Chondroma and osteochondroma may produce similar symptoms and signs like condylar hyperplasia, but they are often localised, grow more rapidly and can cause greater asymmetry. However diagnosis of condylar hyperplasia can be made by a

combination of clinical and radiologic findings. Radiographic evaluation includes panoramic radiograph, posterior anterior radiographs, TMJ radiographs, Bone scintigraphy scans and computed- tomography images with 3D reconstruction. Panoramic and posteroanterior radiographs help in surveying the shape of mandibular condyles on both sides and also midlines of face and dentition can be recorded and evaluated. [6] TMJ radiographs help to know abnormalities in size and shape of condylar head. [1]

Computerised tomography helps to establish pathology, compare condylar morphology, and provide a three dimensional rendition of the bony structures. In order to establish a proper treatment plan, it is essential to distinguish active and inactive growth forms. Bone single photon emission computed tomography is an essential tool in visualising hyperactivity of condyle specially in unilateral cases. [9] Radioactive isotope employed is Technitium 99 methylene bisphosphonate, and increased uptake of the isotope indicates continuing growth activity. A difference in uptake of isotope of 10% or more between the two condyles is regarded as indicative of condylar hyperplasia. It is not regarded as a main indicator of growth activity due to the false positive results in cases with TMJ inflammation. [13]

Treatment plan for the condition is primarily surgical followed by orthodontic therapy. Sub-total condylectomy of the affected side is indicated to limit progressive asymmetry during the active phase of excessive condylar growth. Secondary correction by mandibular or maxillary osteotomies or both is appropriate to correct any residual occlusal and facial asymmetry. However, if osteotomies are done while condylar activity persists then further deformity may develop. Consequently, accurate assessment of cessation of excess activity in the condyle is needed. Conversely, condylectomy in a 'burnt-out' condyle causes undue and unnecessary disruption of the TMJ. Bone scintigraphy of the mandibular condyles is a useful indicator of continued bone activity. [14]

Conclusion

Attention to the patient's primary complaint is important for the early diagnosis of CH, because the patient's awareness of the exact nature of such a slowly growing pathology may be low. Pain, dysfunction, and clicking are common findings. This persistent pain is most likely caused by changes in the length, form, and size of the condyle and occasionally unstable occlusion. Additional studies are required to probe into the etiology and treatment modalities of the condition.

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