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GROWTH DISTURBANCE OF THE MANDIBLE IN JUVENILE RHEUMATOID ARTHRITIS

by

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The detection of changes in the temporomandibular joint in juvenile rheumatoid arthritis presents both clinical and roentgenologic difficulties. Pantomography and orthopantomography (PAATERO 1953, 1954, 1959, TAMMISALO & MATTILA 1963, TAMMISALO 1964) seem in this respect to give better results than other roentgenologic methods, especially when the articular ends of the condyles are concerned.

Affection of the temporomandibular joint is common in adults (UOTILA 1964) but less frequent in children, in whom growth disturbance of the mandible, or micrognathia, occurs in 4 to 25 % of patients in different series (SAIRANEN 1964). Disturbance in growth of the mandible, following rheumatic arthritis of the temporomandibular joint, has been generally accepted as a cause of micrognathia (ENGEL et coll. 1949, CAFFEY 1961) though divergent opinions have been presented (DÉCOURT et coll. 1951, SAIRANEN).

Material and Methods. The material included 24 unselected patients suffering from rheumatoid arthritis that had commenced before the age of 15. Eight of the patients were boys. All the patients had been treated at the hospital and the diagnosis verified. The control group included 55 healthy children, who were all below 11 years of age.

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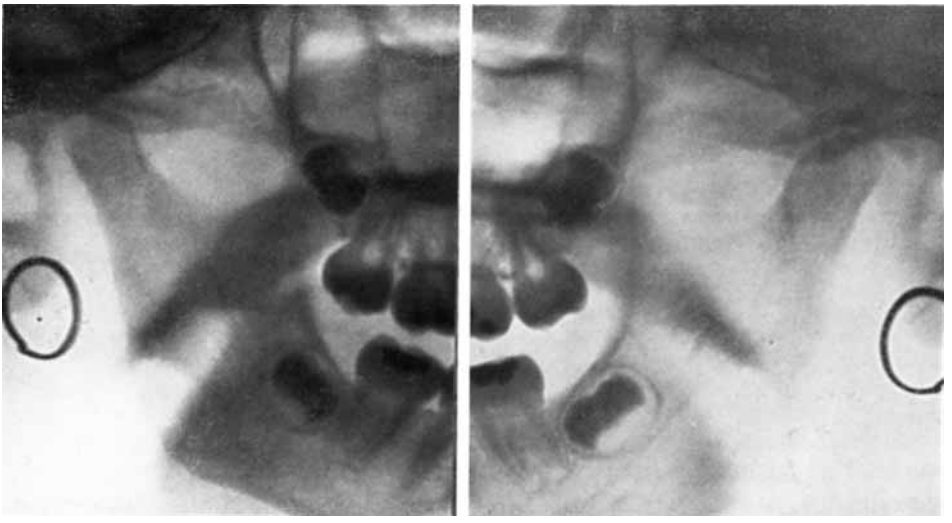

Fig. 1. An apparently normal temporomandibular joint although clinically probably affected. Disease of 2 years duration.

The clinical examination comprised a recording of the history, and palpation of the temporomandibular joint for mobility and tenderness. The condition was classified in four stages of severity (STEINBROCKER et coll. 1949). The roentgenologic examination of the temporomandibular joint was carried

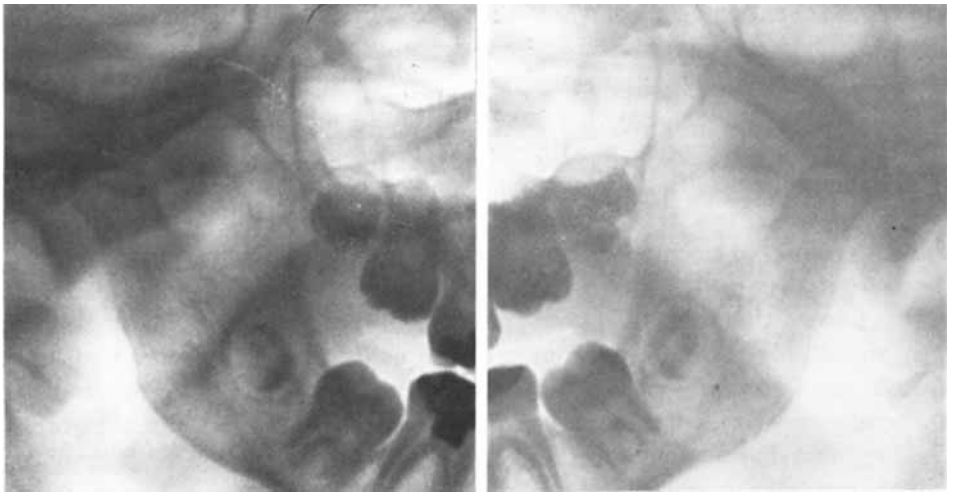

Fig. 2. Case 3. Considerable bilateral condylar flattening. Slight abnormality of posterior margin of ramus on left side.

Table

Age at beginning of disease, duration and degree of severity in patients with roentgen changes in the temporomandibular joint

Case	Age in years			Duration in years			Stages			
	<6	7—10	>10	2	3	>3	I	II	III	IV
3	+					+			+	
7	+					+				+
10			+	+					+	
3		+				+		+		
20	+				+		+			

out in the rheumatic subjects by orthopantomography, and on the control material by pantomography. The rotational beams in the former turn successively about three axes so as to permit a penetration of the dental arches throughout their length, more or less perpendicularly, but the more dorsal areas in oblique projections. The contours of the condyle will generally appear clearly, while the articular fossa may not be represented equally well.

Results and Discussion

The temporomandibular joint was clinically proved to be affected in 3 patients of the rheumatic group. Orthopantomography revealed changes in the condyle in 5 patients, in 2 of whom the temporomandibular joint was clinically affected. Thus the joint was roentgenologically normal in one patient, in spite of the clinically indicated affection (Fig. 1).

It may be mentioned that only one patient had had corticosteroid therapy for any considerable period (Case 10, see Table).

The temporomandibular joint, especially in the region of the condyle, proved to be normal in size and shape in pantomography of the jaw in the control group. No essential difference could be noted between the dentition of the two groups.

It is known that joint affections in children may be asymptomatic and this may well apply to the temporomandibular joint. There is consequently not always any correlation between the clinical and roentgenologic findings. Flattening or absence of the condylar head was apparent in the present material. On the other hand, typical arthritic changes, such as erosion or irregularity of the condylar surface, were evident only in 3 patients, in two of whom there was also a clinically proved affection of the joint. The most marked

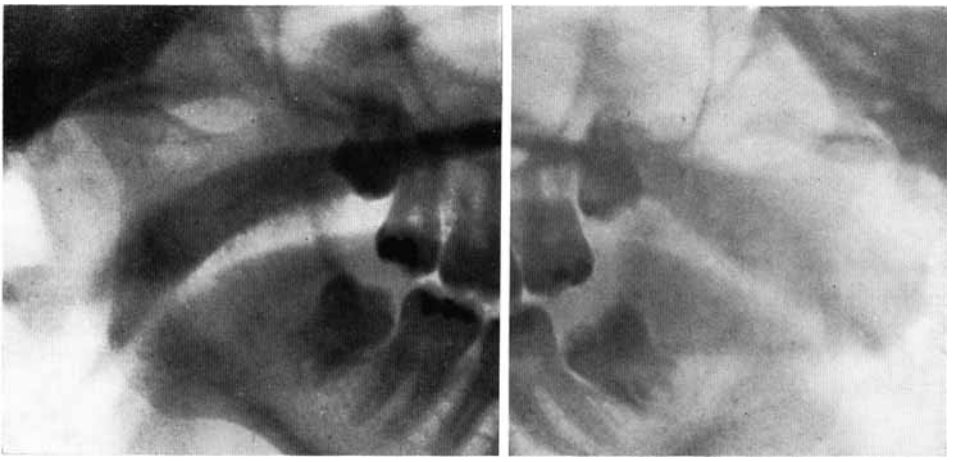

Fig. 3. Case 7. Flattening of both condyles and marginal irregularities. Micrognathia.

changes appeared in a patient in whom the disease had run a course of only 2 years. This patient had had corticosteroid therapy for a relatively long period. FORSSLUND et coll. (1961) described two adult subjects with absorption of the condyle and presumed the probable cause of this to be the prolonged exhibition of corticoids. Corresponding cases may however be found in the present material in which corticoids were not used at all or only for short periods. Arthritic changes in the temporomandibular joint obviously develop at inconstant rates.

Considerable roentgen changes had occurred in the condyle in two patients of the present material before they were 6 years old and had lasted for 3 to 7 years. Since mandibular growth reaches its maximum below the age of 6 years, it might be supposed that micrognathia would have developed if affection of the temporomandibular joint is to be accepted as an exciting cause. In the only patient with micrognathia in this material, changes in the condyle approximately corresponded to those in the other two patients. It would thus appear that it is unlikely that temporomandibular joint affections alone are the cause of disturbances to the growth of the mandible.

Acknowledgement

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SUMMARY

Twenty-four patients suffering from juvenile rheumatoid arthritis were submitted to orthopantomography of the jaw and 55 control patients were examined by pantomography. It appears that disturbances to the growth of the mandible, or micrognathia, in children with rheumatoid arthritis may be produced by causes additional to affection of the temporomandibular joint.

ZUSAMMENFASSUNG

Vierundzwanzig Patienten mit juveniler rheumatoider Arthritis wurden einer Orthopantomographie des Kiefers zugewiesen, und 55 Kontrollpatienten wurden mittels Pantomographie untersucht. Es scheint, dass die Wachstumsstörungen des Unterkiefers — Mikrognathia — bei Kindern mit rheumatischer Arthritis durch Faktoren verursacht werden, die zur Affektion des Kiefergelenkes noch hinzukommen.

RÉSUMÉ

Vingt-quatre malades atteints de polyarthrite chronique rhumatismale juvénile et 55 sujets témoins ont subi une orthopantomographie maxillaire. Il en ressort que les troubles du développement de la mandibule ou la micrognathie peuvent, chez les enfants atteints de polyarthrite chronique rhumatismale, être dus à d'autres causes que l'atteinte rhumatismale de l'articulation temporo-maxillaire.

REFERENCES

Caffey J.: Pediatric X-ray diagnosis. 4th edition. Year Book Publishers, Chicago 1961.

Décourt J., Chaput A., Cauhépé J. et coll.: Troubles du développement de la mandibule associés à des lésions ostéo-articulaires chroniques généralisees de type rhumatismal. Bull. Soc. méd. hôp. (Paris) 67 (1951), 172.

Engel M. B., Richmond J. and Brodie A. G.: Mandibular growth disturbance in rheumatoid arthritis of childhood. Amer. J. Dis. Child. 78 (1949), 728.

Forsslund G., Bjurwall B. and Orrling S.: Bilateral absorption of the capitulum mandibulae in rheumatoid arthritis. Acta odont. scand. 19 (1961), 247.

Paatero Y. V.: Radiography of the temporomandibular joint. Ann. chir. gynaec. Fenn. 42 (1953), 259.

— Pantomography in theory and use. Acta radiol. 41 (1954), 321.

— The orthopantomograph and its clinical use. Suom. Hammaslääk. Toim. 55 (1959), 172.

Sairanen E.: On micrognathia in juvenile rheumatoid arthritis. Acta rheum. scand. 10 (1964), 133.

Schwartz L.: Disorders of the temporomandibular joint. W. B. Saunders Company, Philadelphia and London 1959.

Steinbrocker O., Traeger C. H. and Batterman R. C.: Therapeutic criteria in rheumatoid arthritis. J.A.M.A. 140 (1949), 659.

Tammisalo E. H.: Orthopantomographic roentgenography of the temporomandibular joint. Suom. Hammaslääk. Toim. 60 (1964), 139.

— and Mattila K.: Condyles in orthoradial pantomography. Suom. Hammaslääk. Toim. 59 (1963), 247.

Uotila E.: The temporomandibular joint in adult rheumatoid arthritis. A clinical and roentgenological study. Acta odont. scand. 22 (1964), Suppl. 39.