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BILATERAL ABSORPTION OF THE CAPITULUM MANDIBULAE IN RHEUMATOID ARTHRITIS

by

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Rheumatoid arthritis is a progressive systemic disease of unknown origin and is characterized by inflammation in the joints. Periods of remission are also characteristic, alternating with exacerbations, which further increase the destruction of the joints with each successive attack of the disease. Rheumatoid arthritis occurs most frequently in women, and the age at onset is usually between 20 and 40 years.

Even the temporo-mandibular joints may be involved in this disease. In this respect they do not differ essentially from other joints. It should be kept in mind by both physicians and dentists that temporo-mandibular joint symptoms can be an indication of rheumatoid arthritis.

According to *Steinhardt* (1934), the development of the temporo-mandibular joints is not complete before the individual reaches 25 years of age, and rheumatoid arthritis occurring early in life (particularly before 15 years of age) can therefore give rise to disturbances in the growth of the mandible. In such conditions it is the chondrogenetic zone of the capitulum mandibulae that is attacked (*Sarnat,* 1951). *Engel, Richmond, & Brodie* (1949) published photographs of a girl at ages 4½, 12½, and 16 years. As her age advanced, the chin became increasingly receeding as the result of condylar growth arrest from rheumatoid ar-

thritis. *Bellinger* (1940) expressed the opinion that symptoms from the temporo-mandibular joint are not at all uncommon but that this joint is one of the latest to be attacked by the disease. *Markowitz & Gerry* (1950) reported two cases, however, in which the mandibular joint was the first to become involved. In their series of 92 patients with rheumatoid arthritis, the mandibular joint was involved in 8.7 per cent. *Wang-Norderud* (1959) considers temporo-mandibular joint arthritis to be so rare in rheumatoid arthritis that its practical importance is slight. *Russel & Bayles* (1941) and *Bayles & Russel* (1941) (almost identical articles) reported extensive experience with rheumatoid patients. They found the temporo-mandibular joint to be affected in 51 per cent of 100 consecutive admissions for rheumatoid arthritis. The results of this study are quoted in the majority of studies on the subject; e.g. those of *Comroe, Collins & Crane* (1954), *Oschrain & Sackler* (1955), *Hertz* (1957), and *Husted* (1956, 1958). The reported incidence seems to be higher than that found in other series. In the way of comparison it may be mentioned that *Foged* (1941) found symptoms from the temporo-mandibular joints in two per cent of 2,400 patients admitted to the hospital for other diseases; *Boman* (1947) reported that in a group of 1,350 adult patients at least one-third had some form of temporo-mandibular joint symptoms. *Markovitz & Gerry* (1949) examined 700 individuals and found temporo-mandibular joint symptoms in 28 per cent.

According to *Russell & Bayles,* the most important and primary pathologic change giving rise to the temporo-mandibular joint symptoms occurring in rheumatoid arthritis is synovitis. Proliferation of the synovium, periarticular edema and hydrarthrosis may then follow and produce pain, tenderness, swelling and irritative phenomena in the nerve supply to the synovium. In other joints, e.g. those of the fingers, arthritis deformans with absorption of the bony parts of the joints is often observed. Whether or not the same applies to the temporo-mandibular joint in rheumatoid arthritis does not seem to have been demonstrated. Radiography is a less valuable diagnostic measure because of the generalized osteoporosis occurring in this disease and because of the difficulty of preventing other bony parts of the skull from obscuring the joints. For esthetic reasons permission is seldom

given for postmortem studies. The literature does contain a description, however, of one case of absorption of the capitulum mandibulae in a patient with rheumatoid arthritis. It is illustrated by photographs of an autopsy preparation, taken from the medial and lateral parts, showing that only the condyloid process remains as a peg in the fovea articularis (*Wang-Norderud,* 1959). Unfortunately, the case history contains no record of the clinical symptoms from the temporo-mandibular joints, nor is it stated if the absorption was bilateral. For this reason, it would be of great interest to be able to demonstrate clinically and radiographically extensive absorption of the capitula mandibulae in rheumatoid arthritis. This was done by the writers in two cases.

Case histories

Case 1.

The patient was a 57-year-old married woman with a history of generally good health before the appearance of the joint disease in question. The onset of rheumatoid arthritis occurred in connection with and acute attack of tonsillitis in 1952. At first, finger joints, wrists, and knees were affected. Irgapyrin therapy was instituted and continued for a short period. During subsequent attacks of the disease in 1954 and 1956 the patient required long periods of hospital care with corticosteroid therapy and gold injections. After a brief remission during 1957 the disease has progressed successively, with involvement of an increasing number of joints during the last two years. Intensive therapy with a variety of preparations such as salicylates, Butazolidin, Irgapyrin, Aralen, and gold injections was carried out without noteworthy results. Finally, for almost two years at the time of writing, this patient has been on continuous corticosteroid therapy (Deltacortril up to 8 mg daily). In addition to the presence of the typical changes in the joints and the typical course of the disease, the diagnosis of rheumatoid arthritis was verified by a positive Waaler Rose reaction. The sedimentation rate ranged between 20 and 65 mm in one hour. AS and ASta titrations were nomal; i.e., 100 and 0.25 respectively. As is common in rheumatoid arthritis, this patient has sideropenic anemia. At the time of writing the patient presents grave arthritic changes, especially in the

Left

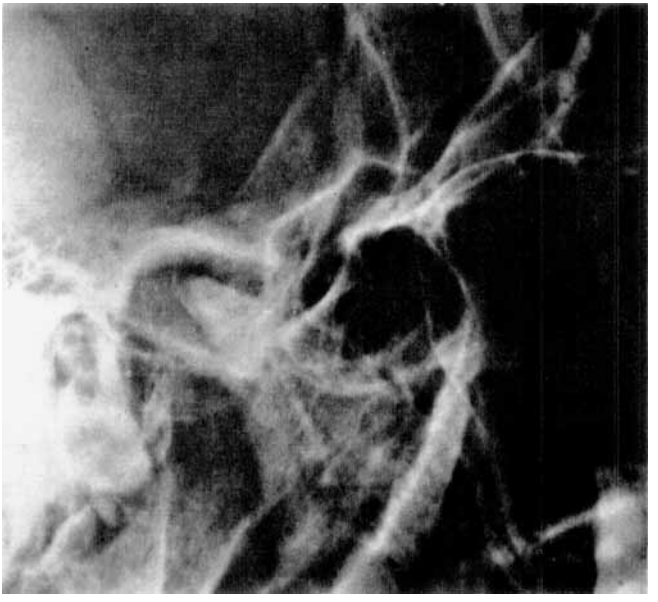

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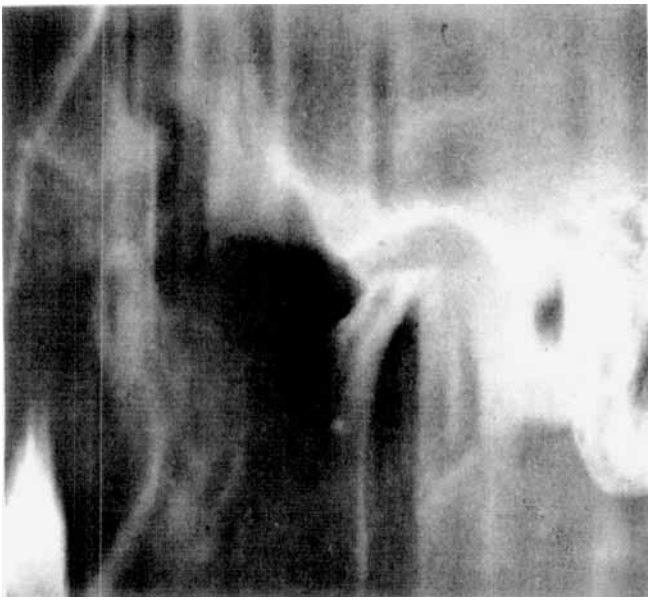
Fig. 1. Case 1. Radiographs of the left and right temporomandibular joints with the patient's mouth closed. Bilateral absorption of the capitulum mandibulae.



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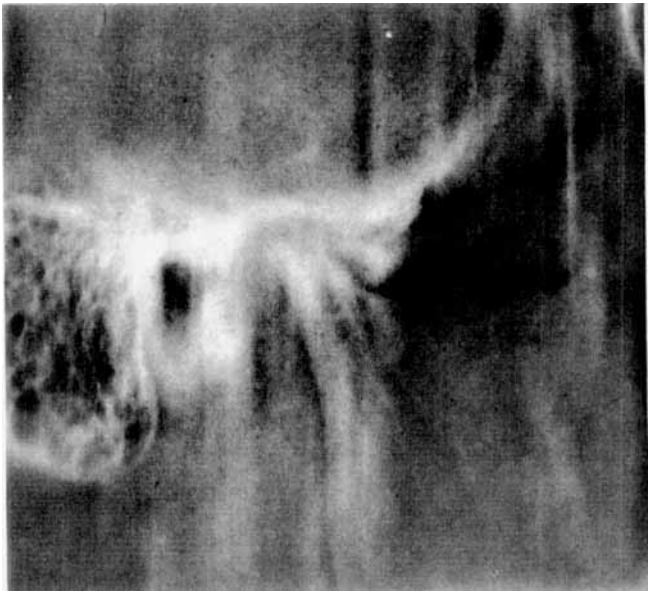


Right

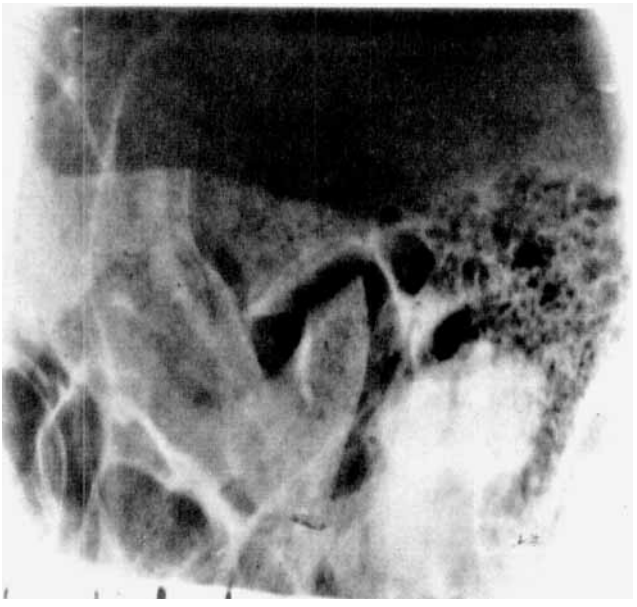
Fig. 2. Case 1. Tomograms of both temporomandibular joints with the patient's mouth closed.

hands, with typical muscular atrophy and ulnar deviation of the fingers, radiographically demonstrable joint destruction in the wrists and finger joints as well as bone destruction in the metacarpal bones. A general demineralization of the skeleton is also evident.

While hospitalized in 1958, the patient bit into a hard pear and sustained what was described as luxation of the temporomandibular joint. For a short time thereafter she complained of tenderness over the joints and in the masticatory musculature. Since that time the patient has been unable to chew as formerly. She has all her teeth with the exception of the wisdom teeth. The teeth are in well-repaired condition with attrition facets. The patient has an open bite with occlusion contacts on the second molars only. There is a prematurity on the second right molar. The patient's dentist reports that earlier her bite was normal. During hospitalization in 1959 for correction of toe deformities it was noted that the patient had this open bite. X-ray examination at that time showed changes in the temporo-mandibular joints resulting from bilateral absorption of the capitula mandibulae. (Figs. 1 and 2).

Case 2.

This patient was also a woman whose joint disease appeared in 1952. At the onset she complained only of mild aching and stiffness in hand and finger joints. For several years she had only negligible discomfort from her joints. In the summer of 1957 her disease became acute, with involvement of a number of joints. During 1958 and 1959 the patient was hospitalized for long periods, undergoing treatment with cortison preparations (4—8 mg Deltison daily). In addition, she received Butazolidin and salicylates periodically. The disease gradually developed into a condition with typical rheumatoid joint changes, localized primarily in the hands with clench diastasis in both hands. Early in 1959 she periodically complained of pain in the temporomandibular joints on mastication. The position of the jaws gradually changed so that in February 1959 the patient presented an open bite and difficulty in swallowing. At x-ray examination of the temporo-mandibular joints absorption of the capitulum mandibulae was apparent bilaterally (Fig. 3).



Left

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Fig. 3. Case 2. Radiographs of the left and right temporomandibular joints with the patient's mouth closed. Bilateral absorption of the capitulum mandibulae.

DISCUSSION

These two patients were given corticosteroid therapy over long periods. According to *Edström* (1961), who discussed the hip joint destruction in rheumatoid arthritis, a deterioration in the clinical and radiological features has been observed during the past 10 years. In such cases, long-term administration of corticosteroids is the probable cause. Since the destruction in the temporo-mandibular joints might be of similar origin, it seems appropriate to cite the two causes of the change in the clinical picture given by *Edström:* (1) Corticosteroid therapy has produced a greater degree of osteoporosis, with a resulting decreased resistance to destructive factors in the pathologic process, (2) Corticosteroid therapy has resulted in a decreased reaction to pain, thereby diminishing the muscular defence of involved joints. These are exposed to relative hyperfunction; the patients use them more, since pain does not prevent them from doing so.

SUMMARY

In rheumatoid arthritis changes in the joints are among the phenomena observed. The writers describe two cases in which the disease changed the temporo-mandibular joints in a manner such that bilateral absorption of the capitulum mandibulae occurred (Figs. 1, 2, and 3).

Sequelae of this condition were tenderness and pain in the temporo-mandibular joints and masticatory muscles as well as open bite.

A perusal of the literature shows that such extensive bilateral absorption does not seem to have been described earlier. There is, however, a description of an autopsy preparation showing unilateral absorption of the capitulum mandibulae (*Wang-Norderud,* 1959).

It is pointed out that, in protracted cases of rheumatoid arthritis, attention should be paid to the state of the temporo-mandibular joints, especially when long-term corticosteroid therapy is given. The reasons for this statement are discussed and illustrated by two cases observed by the writers.

RÉSUMÉ

RÉSORPTION BILATÉRALE DE LA TÊTE DU CONDYLE DU MAXILLAIRE INFÉRIEUR DANS L'ARTHRITE RHUMATOÏDE

Dans l'arthrite rhumatoïde, les modifications articulaires sont parmi les phénomènes observés. Les auteurs décrivent deux cas dans lesquels l'affection a modifié les articulations temporo-maxillaires de telle manière qu'une résorption bilatérale de la tête du condyle du maxillaire inférieur s'est produite. (Fig. 1, 2, et 3). Cette affection était accompagnée de douleurs à la palpation et de douleurs spontanées au niveau des articulations temporo-maxillaires et des muscles masticatoires, ainsi que de béance. Une revue de la littérature semble indiquer que de telles résorptions bilatérales étendues n'ont jamais été décrites. Il existe cependant une description d'un sujet d'autopsie présentant une résorption unilatérale de la tête du condyle (*Wang-Norderud* 1959).

Les auteurs soulignent l'attention à apporter à l'état des articulations temporo-maxillaires dans les cas prolongés d'arthrite rhumatoïde, en particulier lorsqu'un traitement de longue durée aux corticostéroïdes est administré. Les raisons de cette assertion font l'objet d'une discussion illustrée par deux cas personnels.

ZUSAMMENFASSUNG

BILATERALE ZERSTÖRUNG DER CAPITULUM MANDIBULAE BEI RHEUMATOIDER ARTHRITIS

Bei rheumatoider Arthritis sind mitunter Gelenkveränderungen zu beobachten.

Die Authoren beschreiben zwei Fälle, in denen die Krankheit Veränderungen des temporo-mandibulären Gelenkes in Form einer bilateralen Absorption hervorgerufen hat (Abb. 1, 2 u. 3).

Die Auswirkungen dieser Erscheinung sind Empfindlichkeit und Schmerzen im temporo-mandibulären Gelenk und den Kaumuskeln sowie ein offener Biss.

Eine Durchsicht der Literatur ergab, dass derartige ausgedehnte bilaterale Absorptionserscheinungen noch nicht beschrie-

ben worden sind. Jedoch ist nach einer Autopsie eine unilaterale Absorption des Capitulum mandibulae beschrieben worden (*Wang-Norderud*, 1959).

Es wird darauf hingewiesen, dass in lang andauernden Fällen rheumatoider Arthritis dem Zustand des temporo-mandibulären Gelenkes Aufmerksamkeit geschenkt werden muss, besonders wenn lange Zeit mit Corticosteroid behandelt wurde. Die Ursache für diese Feststellung wurde anhand zweier von den Authoren beobachteter Fälle diskutiert und illustriert.

REFERENCES

Bayles, T. B. & L. A. Russel, 1941: The temporomandibular joint in rheumatoid arthritis. J. Amer. med. Ass. *116*, 2842—2845.

Bellinger, D. H., 1940: Temporomandibular ankylosis and its surgical correction. J. Amer. dent. Ass. 27, 1563—1568.

Boman, K., 1947: Temporomandibular joint arthrosis and its treatment by extirpation of the disk. A clinical study. Thesis. Stockholm. Acta chir. scand., Suppl. 118.

Comroe, B. J., L. H. Collins & M. P. Crane, 1954: International Medicine in Dental Practice. Philadelphia. Lea & Febiger.

Engel, M. B., J. Richmond & A. G. Brodie, 1949: Mandibular growth disturbance in rheumatoid arthritis of childhood. Amer. J. Dis. Child. *78*, 728—743.

Foged, J., 1941: Om kæbeledsknagen og lignende sygdomme i kæbeleddet. Tandlægebladet. *45*, 605—635.

Hertz, J., 1957: Kirurgi for tandlæger og tandlægestuderende. Speciel del. Stockholm. Almqvist & Wiksell/Gebers.

Husted, E., 1956: Kæbeleddets kirurgiske lidelser. Tandlægebladet. *60*, 535—560.

—»— 1958: Nordisk lærebog i kirurgi for tandlæger. Speciel kirurgi, København. Munksgaard.

Markowitz, H. A. & R. G. Gerry, 1949: Collective review. Temporomandibular joint disease. Oral Surg., *2*, 1309—1337.

—»— 1950: Collective review. Temporomandibular joint disease. Oral Surg., *3*, 75—117.

Oschrain, H. J. & A. Sackler, 1955: Involvement of the temporomandibular joint in a case of rheumatoid arthritis. Oral Surg., *8*, 1039—1043.

Russell, L. A. & T. B. Bayles, 1941: The temporomandibular joint in rheumatoid arthritis. J. Amer. dent. Ass., *28*, 533—539.

Sarnat, B. G., 1951: The Temporomandibular Joint. Springfield, Illinois. Charles C. Thomas.

Steinhardt, G., 1934: Untersuchungen über die Beanspruchung der Kiefergelenke und ihre gewebliche Folgen. Dtsch. *Zahnheilk. Vortr.* Issue number 91.

Wang-Norderud, R., 1959: Kjeveleddenes patologi og terapi. Nordisk Klinisk Odontologi. København. Nordlundes Bogtrykkeri. Vol. 3. 20—V: 1—16.

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