

Craniomandibular disorders in psoriatic arthritis

Correlations between subjective symptoms, clinical signs, and radiographic changes

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One hundred and ten patients with psoriatic arthritis (PA group) and 110 individually matched control subjects (C group) without general joint or skin disease were studied to determine correlations between radiographic changes, detected on orthopantomography, in the condyle of the temporomandibular joint and subjective symptoms and clinical signs of craniomandibular (CM) disorders. In the PA group there was a correlation, not found in the C group, between the radiographic changes, especially erosions, and subjective symptoms and clinical signs of CM disorders. The correlations found indicate that in PA subjective symptoms, clinical signs, and radiographic changes in the stomatognathic system are mainly caused by the systemic joint disease. □ *Psoriatic arthritis; questionnaire; temporomandibular joint disease*

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Psoriatic arthritis (PA) is an inflammatory, mostly seronegative, asymmetric arthritis in patients with psoriasis (1). So far, only about 30 cases of PA with temporomandibular joint (TMJ) involvement have been reported (2). Thus the frequency of clinical and radiographic signs is not well known, but, clinically, TMJ involvement in PA has been described as causing pain, palpatory tenderness, and gradual restriction of movement of the TMJ (2) and, radiographically, mainly erosive changes in the TMJ (3). However, all these studies have been uncontrolled. The subjective, clinical, and radiographic features of craniomandibular (CM) disorders in patients with PA have been investigated in three previous studies (4–6).

The aim of the present study was to find answers to the following questions: 1) Is there a correlation between the radiographic findings in the TMJ and subjective symptoms and clinical signs of CM disorders in patients with PA, as compared with subjects without a general joint and skin disease? 2) Is there a correlation between any single radiographic sign in the TMJ and subjective symptoms and clinical signs of CM disorders?

Patients and methods

Psoriatic arthritis group

One hundred and ten patients (63 men and 47 women, with a mean age of 51 years and an age range of 25–81 years) from different parts of Finland, with a medical diagnosis of psoriatic arthritis in accordance with the criteria of Moll & Wright (7), were examined for subjective symptoms and clinical signs of CM disorders at the Department of Prosthetic Dentistry, University of Helsinki, and were then referred to the Department of Dental Radiology for a panoramic examination of the jaws.

Control group

One hundred and ten individuals (63 men and 47 women, with a mean age of 51 years and an age range of 21–81 years) with no known general joint or skin disease were selected from among the patients coming to the Institute of Dentistry, University of Helsinki, for restorative treatment. The selection was based on age, sex, and dentition type so as to match the patients in the

PA group. One hundred of these consented to being referred to the Department of Dental Radiology for an ordinary panoramic examination of the jaws, which is a routine procedure for new patients coming to the Institute for restorative treatment.

Details regarding the PA group and the C group have been reported earlier (4, 5).

Questionnaire

Subjective symptoms of CM disorders were assessed by means of a questionnaire. A subjective symptom score (SSS) ranging from 0 to 8 was obtained by adding the following symptoms (one point for each): morning stiffness/tiredness in jaws, sounds from the TMJ, restricted mouth opening, pain in the cheek area when opening the mouth, pain in the cheek area when chewing, pain in the TMJ area when opening the mouth, pain in the TMJ area when chewing, and TMJ locking/luxation. The duration, extent, and severity of the subjective general joint symptoms related to PA were assessed in these patients.

Details regarding the assessment of subjective symptoms of CM disorders and PA variables have been described in a previous paper (4).

Clinical examination

The individuals in both groups were subjected to a routine stomatognathic examination (8, 9). The examination included palpation of the masticatory muscles and the TMJs (laterally and posteriorly), auscultation of TMJ sounds (clicking and crepitation), measurement of mandibular movement capacity, and recording of pain in these movements. The severity of the clinical signs was graded by means of the clinical dysfunction score (CDS) in accordance with Helkimo (10).

Details regarding the clinical examination have been reported in a previous paper (5).

Radiographic examination

Orthopantomography was used in the present study, and therefore only the condyle

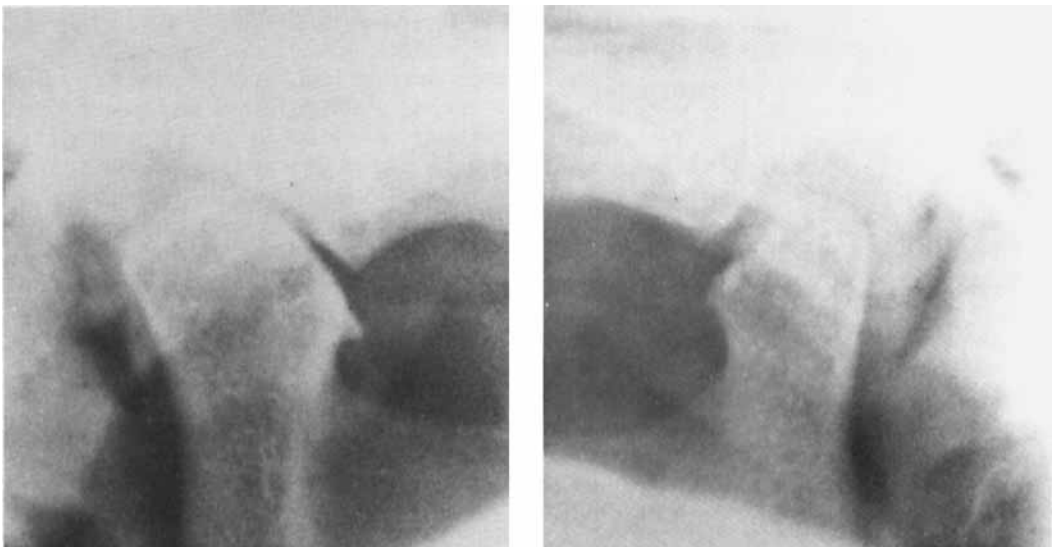


Fig. 1. A 30-year-old man with psoriatic arthritis for 9 years and subjective TMJ involvement for 9 years. Panoramic radiograph showing flattening and osteophyte in the right and extensive erosion in the left condyle. Tenderness to lateral palpation of the left TMJ. TMJ sounds: crepitation on the right and clicking on the left. Maximal mouth opening and laterotrusion to the left caused pain.

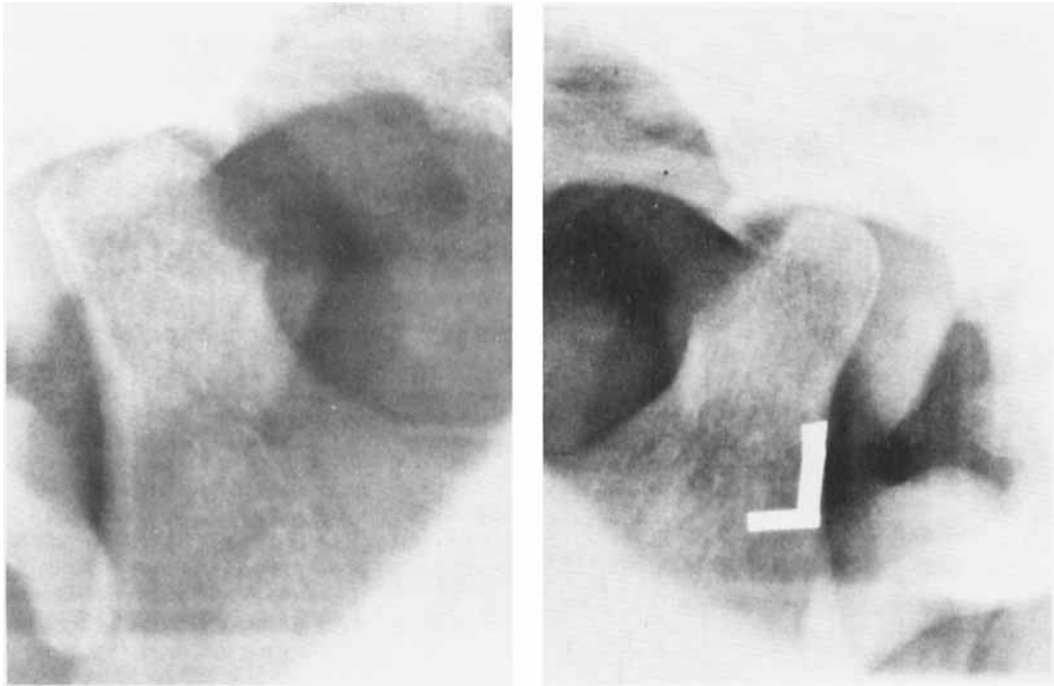


Fig. 2. A 36-year-old man with psoriatic arthritis for 9 years and subjective TMJ involvement for 2 years. Panoramic radiograph showing local erosion in the right and extensive erosion in the left condyle. Tenderness to lateral palpation of the left TMJ. Swelling (the only patient) over the left TMJ. Crepitation from the TMJs bilaterally. Maximal mouth opening, laterotrusion to the left, and passive retrusion caused pain.

of the TMJ was judged (11). Radiographic abnormalities were classified as flattening and osteophyte (Fig. 1), each scoring 1 point, and as sclerosis (Fig. 2), osteoporosis, and erosion (Figs. 2 and 3), each scoring 1 point when local and 2 when extensive. Sclerosis and erosion were divided into cortical and subcortical. The radiographic sign score (RSS) modified from Wenneberg et al. (12) was calculated by adding the points of all the above radiographic signs (maximum score, 20 points; including both condyles) (6).

Details regarding the radiographic examination have been reported earlier (6).

Statistics

The correlations were obtained by using Pearson's product moment correlation coefficient. The following levels of statistical sig-

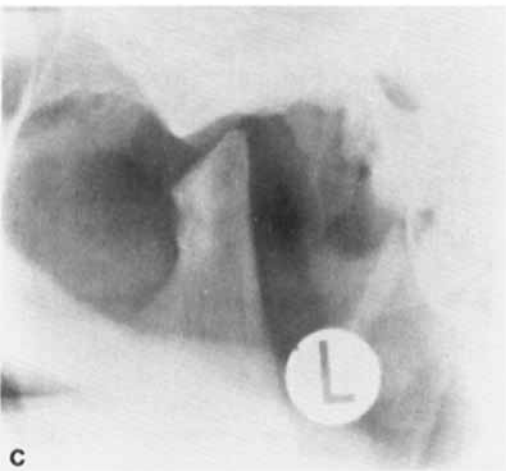
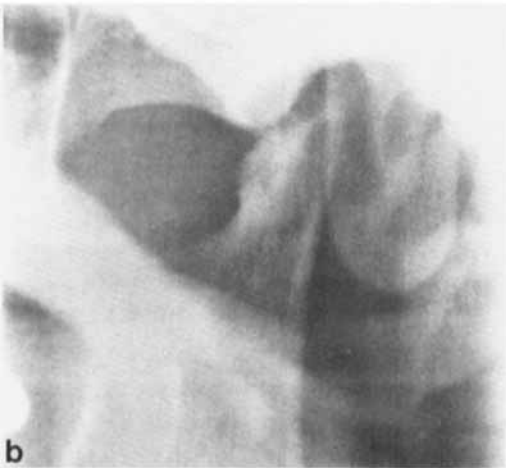
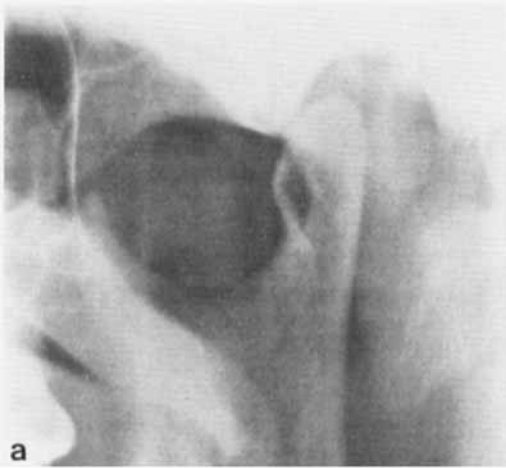
nificance were used: (***) $p < 0.001$ and (**) $p < 0.01$.

Results

Correlations (PA group)

The RSS did not correlate significantly with the duration, extent, or severity of PA. The RSS correlated with the SSS ($p < 0.01$; Table 1), and one of the variables of RSS, osteophytes, correlated with pain in the TMJ experienced at the onset of subjective symptoms of CM disorders ($p < 0.01$). The RSS, and especially erosions in the condyle, correlated with the CDS ($p < 0.01$ and $p < 0.001$, respectively) and with most clinical signs of CM disorders (Table 2).

Correlations between erosions (with or without other radiographic changes in the



same condyle; Fig. 2) and subjective symptoms and clinical signs of CM disorders are shown in Table 3. Eleven patients had erosions together with other changes, whereas 11 patients had erosions only. Of the 11 patients with erosions only, 9 had subjective and/or clinical signs of CM disorders related to the TMJ. Subjectively, they had pain and sounds in the TMJ during function and, clinically, tenderness to palpation of the TMJ and sounds and pain in the TMJ during function. Four of these had tenderness to lateral and one to posterior palpation of the TMJ. Three patients with only unilateral erosions had no subjective symptoms in their TMJs. Three patients with only bilateral erosions had only unilateral subjective symptoms.

The CDS correlated with the SSS ($p < 0.001$). Correlations between selected clinical variables and subjective symptoms of CM disorders are presented in Table 4. Crepitation from the TMJ correlated with the CDS ($p < 0.01$).

Correlations (C group)

The CDS correlated with the SSS ($p < 0.001$). Correlations between selected clinical variables and subjective symptoms of CM disorders are presented in Table 4. Crepitation from the TMJ correlated with the CDS ($p < 0.001$).

Discussion

Subjective symptoms and clinical signs of CM disorders, especially those related to the TMJ, were more frequently reported and also more frequently found in the PA group than in the C group (4, 5).

Fig. 3. A 38-year-old man with psoriatic arthritis for 9 years. Subjective TMJ involvement for 8 years. Panoramic radiograph showing development of erosion in the condyle of the left TMJ. 3a. No changes in the left condyle at first examination. 3b. Erosion in the left condyle 3 years later. 3c. marked flattening of the left condyle with intact cortical lining and with sclerosis at the time of this study 8 years later. No tenderness to palpation of the left TMJ laterally or posteriorly at the last follow-up study. Crepitation from the left TMJ. No painful mandibular movements.

Table 1. Significant correlations within the PA group (*n* = 110) between the variables included in the subjective symptom score (SSS) and the radiographic sign score (RSS)

	RSS	Cortical erosion (<i>n</i> = 22)
SSS	0.28**	0.39***
Morning stiffness/tiredness in jaws		0.29**
Sounds from TMJ	0.28**	0.26**
Restricted mouth opening	0.25**	0.32***
Pain in cheek area: opening		0.27**
Pain in TMJ area: opening		0.29**
Pain in TMJ area: chewing		0.33***
TMJ locking/luxation		0.27**

Table 2. Significant correlations within the PA group (*n* = 110) between variables included in the clinical dysfunction score (CDS) and the radiographic sign score (RSS)

	RSS	Cortical erosion (<i>n</i> = 22)	Subcortical sclerosis (<i>n</i> = 4)	Flattening (<i>n</i> = 11)	Osteophyte (<i>n</i> = 8)
CDS	0.25**	0.32***			
Impaired mandibular mobility	0.49***	0.49***	0.42***		
TMJ function	0.24**				
TMJ crepitation	0.40***	0.29**		0.25**	0.30**
Painful mandibular movements	0.25**	0.40***			

Table 3. Significant correlations within the PA group (*n* = 110) between cortical erosions of the mandibular condyle with or without other radiographic changes and variables included in the subjective symptom score (SSS) and clinical dysfunction score (CDS)

	Erosion only (<i>n</i> = 11)	Erosion with other changes (<i>n</i> = 11)
SSS	0.36***	
Morning stiffness/tiredness	0.30**	
Restricted mouth opening	0.25**	
Pain in cheek area when opening	0.29**	
Pain in TMJ area when opening	0.32***	
Pain in TMJ area when chewing	0.37***	
TMJ locking/luxation	0.25**	
CDS	0.35***	
Impaired mandibular mobility	0.26**	0.41***
Painful mandibular movements	0.43***	

Remission of all general joint symptoms was reported by 8% of the patients with PA (4). However, because of the intermittent and migrating nature of PA, the remission rates are higher with regard to single joints or single-joint groups (13).

Indices and scores are used in epidemiologic and clinical investigations to classify the degree of CM disorders, but their value has previously been questioned (14). However, good agreement has been found in several studies between reported symptom

Table 4. Significant correlations between tenderness to palpation of the TMJ (subunit of CDS), crepitation from the TMJ, impaired mandibular mobility (subunit of CDS), and subjective symptoms of cranio-mandibular disorders in the PA group ($n = 110$) and in the C group ($n = 110$)

SSS/ subjective symptom	TMJ tenderness		Crepitation from the TMJ		Impaired mandibular mobility	
	PA ($n = 41$)	C ($n = 18$)	PA ($n = 64$)	C ($n = 37$)	PA ($n = 24$)	C ($n = 10$)
SSS	0.39***	0.44***	0.30**	0.38***	0.37***	
Morning stiffness/tiredness in jaws	0.37***	0.44***				0.28**
Sounds from TMJ	0.33***		0.42***	0.45***		
Restricted mouth opening	0.27**	0.34***			0.35***	0.39***
Pain in cheek area: opening	0.31***				0.35***	
Pain in cheek area: chewing	0.41***				0.29**	
Pain in TMJ area: opening	0.42***	0.49***		0.26**		
Pain in TMJ area: chewing	0.35***					
TMJ locking/luxation					0.32***	

indices and clinical sign indices (10, 15). Good agreement was also found in the present series between the SSS and CDS, both in the PA group and in the C group.

In the PA group the RSS also correlated with the SSS and with the CDS, demonstrating the validity of these scorings in assessing the degree of CM disorders as related to an inflammatory TMJ disease.

Hence, the correlations strongly suggest that PA affecting the TMJ is the commonest cause of CM disorders in these patients. Especially erosion, which is regarded as the most typical radiographic sign of inflammation in a joint (3, 13), correlated significantly with all but one of the subjective symptoms and with most of the clinical signs of CM disorders.

It is probable that the difference in the frequency of radiographic changes between the PA group and the C group was due to PA. In the C group the changes were mostly due to osteoarthritis, whereas in the PA group the changes in the condyle were mainly due to inflammatory changes caused by PA but also to secondary osteoarthritis in the joint during remission, as described for rheumatoid arthritis (16). Destructive signs, such as erosion of the condyle, were frequently accompanied by other radiographic changes.

Erosions, with or without other changes in the condyle, did not correlate significantly

with tenderness to palpation of the TMJ. An explanation may be that PA of the TMJ was in remission or that erosion in its late phase does not cause tenderness to palpation of the TMJ. The latter assumption was supported by the finding that in some cases erosions in the condyle were detected in patients without any subjective symptoms or clinical signs (except for crepitation) of TMJ affliction (Fig. 2). In PA, other fibrocartilagenous joints such as the sternal synchondrosis and the sacroiliac joints are also often clinically asymptomatic in spite of inflammatory radiographic signs (17, 18). Moreover, of the 11 patients with erosions only in the condyle, only 3 had lateral and just 1 had posterior tenderness to palpation. The last-mentioned patient also had the only posterior surface erosion of the condyle. In psoriasis patients, however, especially posterior palpation of the TMJ may be diagnostically difficult because of the frequent occurrence of skin lesions in the external auditory meatus (5).

On the other hand, there is often a time lag between the occurrence of the clinical symptoms and the radiographic changes in the TMJ, for which reason absence of radiographic signs does not exclude the possibility of organic TMJ disease (19–21). Holzmann et al. (22) have shown by scintigraphic methods that in psoriasis patients large proportions of joints demonstrate a pathologic uptake of radionuclides, even in the absence

of subjective symptoms of joint affliction. However, longitudinal studies are necessary to obtain more detailed information on PA in the TMJ.

In the PA group crepitation from the TMJ, indicating structural changes in the joint, correlated with both subjective symptoms and clinical signs of CM disorders. As expected, crepitation from the TMJ and the RSS correlated; both crepitation and radiographic changes are considered to be late signs of TMJ disease (19). In the C group crepitation correlated with tenderness to palpation of the TMJ and with painful mandibular movements, indicating osteoarthritis.

It may be concluded that in PA subjective symptoms and clinical signs of CM disorders (4, 5) and radiographic signs in the condyle of the TMJ (6) are mainly caused by the general disease. Further, in PA there is a correlation between radiographic signs, subjective symptoms, and clinical signs of CM disorders. Erosion is the radiographic sign most frequently associated with subjective symptoms and clinical signs, especially if it is not combined with other radiographic signs.

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