Subjective symptoms from the stomatognathic system in patients with psoriatic arthritis

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One hundred and ten patients with psoriatic arthritis (PA group) and 110 individuals (C group) selected on the basis of sex, age, and dentition to match the PA group answered a questionnaire concerning subjective symptoms of craniomandibular (CM) disorders and general joint symptoms. Patients with PA had more frequent and more severe subjective symptoms than individuals in the C group, such as pain in the temporomandibular joints (TMJ) and cheeks and morning stiffness/tiredness in the jaws. In the PA group the number and severity of subjective symptoms of CM disorders correlated with the number of joints affected by PA and the severity of PA. Pain in the TMJ (reported by 32%) correlated with both the number of joints affected by PA and the severity of PA. □ *Psoriatic arthritis; questionnaire; symptoms; temporomandibular joint disease*

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Psoriatic arthritis (PA) is an inflammatory, mostly asymmetric, and seronegative arthritis associated with psoriasis (1). The exact prevalence of PA in the population is not known, but calculations have suggested that it is about 0.1%, although both lower and higher figures have been reported (1, 2). The onset of PA is commonest at an age of 36–45 years, but arthritis mutilans (severely destructive arthritis) may begin even before the age of 20 (1). Five main clinical groups have been recognized: 1) predominantly distal interphalangeal arthritis; 2) polyarthritis; 3) arthritis mutilans; 4) monoarthritis; and 5) polyarthritis and ankylosing spondylitis (1, 3). However, overlap is common.

Lundberg (4) and Franks (5) were the first to describe PA of the temporomandibular joint (TMJ). In the most extensive study published so far mainly erosive radiographic changes were observed, but only severe cases of PA were selected for the study (6). Clinically, TMJ involvement by PA causes pain, palpation tenderness, and gradual restriction of condylar movement (7). However, the frequency and severity of subjective symptoms of PA in the TMJ are not well known.

The purpose of the present study was to describe subjective symptoms of TMJ involvement in PA and especially to answer the following questions: 1) Do patients with PA differ from control patients with regard to subjective symptoms from the stomatognathic system? 2) Is there a correlation between subjective symptoms in the TMJ and other joint symptoms in patients with PA? 3) Are any subjective symptoms of craniomandibular (CM) disorders characteristic of PA patients?

Patients and methods

Psoriatic arthritis group

One hundred and ten patients (57% men and 43% women) with a medical diagnosis of psoriatic arthritis in accordance with the criteria of Moll & Wright (8) were included in this study; 72 patients had been referred to the Psoriasis Center in Helsinki for rehabilitation, and 38 patients came from the Greater Helsinki area and were participating in a clinical trial of oral gold (Auranofin®). Of the patients, 107 had negative and 3 had

Table 1. Distribution of the individuals by group*, sex, and age

	Age (years)							
	20–30	31–40	41–50	51–60	61–70	71–	Total	Mean
Women								
PA	3	10	10	13	8	3	47	50
C	5	8	9	12	10	3	47	50
Men								
PA	3	10	15	16	15	4	63	52
C	3	11	15	19	12	3	63	52
Total	14	39	49	60	45	13	220	51

* PA = psoriatic arthritis group (n = 110); C = control group (n = 110).

positive rheumatoid factor tests. The diagnosis of PA had previously been confirmed radiographically in 86% of the patients (medical histories).

Age and sex distribution is shown in Table 1. Twenty-one patients (10 men and 11 women) had predominantly distal interphalangeal arthritis, 61 (34 men and 27 women) had polyarthritis, 10 (all men) had arthritis mutilans, 3 (1 man and 2 women) had monoarthritis, and 15 (8 men and 7 women) had polyarthritis and ankylosing spondylitis.

Control group

One hundred and ten individuals (57% men and 43% women) with no known general joint symptoms or chronic skin diseases were selected from among the patients coming to the Institute of Dentistry, Helsinki, for restorative treatment. Age and sex distribution is shown in Table 1. The patients were selected on the basis of age, sex, and dentition type to match the PA group.

Five modified dentition categories after Öberg et al. (9) were formed: group I = dentate patients with bilateral molar support; group II = dentate patients with unilateral molar support; group III = dentate patients without molar support, with or without partial denture; group IV = edentulous patients with one jaw edentulous, with or without complete denture; and group V = edentulous patients with both jaws edentulous, with or without complete dentures (Table 2). One pair of occluding molars was regarded as a molar support.

Questionnaire

A questionnaire of the multiple-choice

Table 2. Distribution of the individuals in accordance with the type of dentition (modified classification method after Öberg et al. (9)) in the psoriatic arthritis (PA) group (n = 110) and in the control (C) group (n = 110)

Type of dentition*	PA group	C group
Dentate individuals		
Group I: bilateral molar support	40	40
Group II: unilateral molar support	14	14
Group III: no molar support	16	16
Edentulous individuals		
Group IV: one jaw edentulous	19	19
Group V: both jaws edentulous	21	21
Total	110	110

* One pair of occluding molars was regarded as a molar support.

type, modified after Wenneberg & Kopp (10), contained demographic questions (sex, age, education) and questions on the course of psoriasis (sites, duration, and severity of skin, nail, and joint disorders), the occurrence of craniofacial pain, and the function and parafunction of the masticatory system. In most of the questions, only one of the alternatives and, in a few questions, any appropriate alternative were to be chosen. The severity of the general joint symptoms in PA was assessed by the question: 'How severely do you experience your general joint symptoms?' The psoriatic patient was required to choose one of the following alternatives: 1) No or minimal discomfort; 2) Slight discomfort; 3) Moderate discomfort; 4) Severe discomfort; 5) Very severe discomfort. The severity of the symptoms of CM disorders was investigated by asking a similar question of all the patients in both groups. Questions about arthritic symptoms (pain, swelling, stiffness) in fingers, toes, wrists, ankles, knees, shoulders, neck, spine, and other joints were used to estimate the extent of PA. The groups of joints, including 'other joints', were regarded as one joint. A score was calculated by counting the number of joints reported as being affected (0–9 units, TMJ excluded).

Statistics

The significance of differences was analyzed by means of the chi-square test and the paired t test. The correlations are given by using Pearson's product moment correlation coefficient. The levels of statistical significance are indicated as follows: $***p < 0.001$, $**p < 0.01$, $*p \leq 0.05$, and NS (not significant) $p > 0.05$.

Results

Education

Seventy per cent in the PA group and 66% in the C group had completed elementary school, 25% and 19% had completed lower secondary school, and 5% and 15% had passed the matriculation examination, respectively (NS).

General joint and skin disorders (PA group)

All the patients in the PA group reported symptoms, including stiffness and pain, elicited by movement in at least one joint, but 3% reported remission of skin lesions. Nail disorders were reported by 67% of the patients.

The distal interphalangeal joints of the fingers were most frequently (87%) and TMJ least frequently (32%) involved. No sex differences could be observed in the involvement of the joints. The numbers of joints affected by PA were 1–2 in 10%, 3–4 in 25%, 5–6 in 22%, 7–8 in 28%, and over 8 in 15%. The mean number was 6 joints.

Ninety-two per cent of the patients had experienced no remission of all the joint symptoms at the same time, and 85% had had no remission of all the skin lesions at the same time. The mean duration of lesions and joint affections was 20 and 11 years, respectively. Ninety-four per cent of the patients experienced moderate to very severe discomfort in their joints, according to their own estimation (Fig. 1). There was no significant difference between men and women.

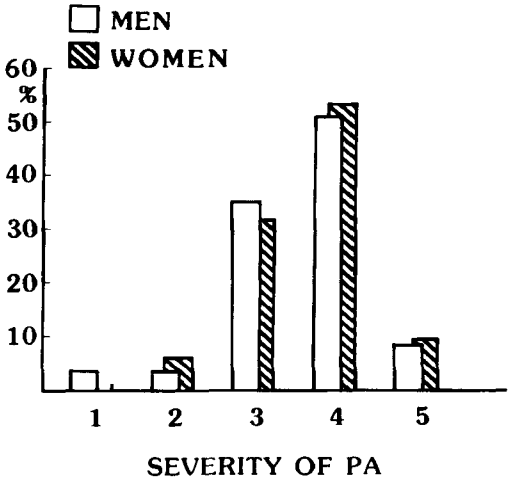

Fig. 1. Severity of joint symptoms in psoriatic arthritis (PA, $n = 110$), according to patients' own estimations. Percentage distribution in accordance with sex. Scale used: 1) no or minimal discomfort; 2) slight discomfort; 3) moderate discomfort; 4) severe discomfort; and 5) very severe discomfort. No statistically significant difference was found between men and women.

Table 3. Percentage distribution of craniofacial pain areas in the psoriatic arthritis (PA) group ($n = 110$) and in the control (C) group ($n = 110$)

Pain area	PA group	C group	p
Ears	22	11	*
Forehead	17	9	NS
Eyes	14	11	NS
Neck	55	31	***
Teeth	15	22	NS
No painful areas	33	48	*

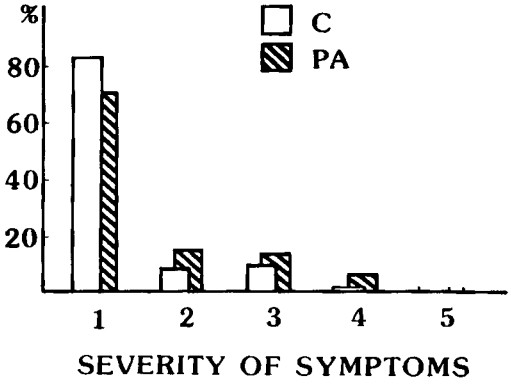

Fig. 2. Percentage distribution of individuals in the psoriatic arthritis (PA) group ($n = 110$) and in the control (C) group ($n = 110$), according to their own estimations of the severity of symptoms of craniomandibular (CM) disorders. The scale used is explained in the legend to Fig. 1. Statistically significant difference was found between the PA group and the C group ($p < 0.01$).

Thirty-two per cent of the patients with TMJ symptoms experienced, in addition, simultaneous exacerbation of PA. The TMJ symptoms started on an average 7 years after the onset of PA.

Subjective symptoms of craniomandibular disorders

Patients in the PA group had craniofacial pain in the areas shown in Table 3 more frequently than patients in the C group, but the differences were statistically significant only with regard to the neck ($p < 0.001$) and ears ($p < 0.05$). Patients in the PA group had more frequent and more severe subjective symptoms than those in the C group ($p < 0.001$, Table 4; and $p < 0.01$, Fig. 2, respectively). There were no statistically significant differences between men and women in the distribution of subjective symptoms in the PA group, but in the C group women had more frequent and more severe symptoms than men ($p < 0.05$ and $p < 0.001$, respectively). The patients in the PA group had pain in the TMJ and the cheeks and morning stiffness/tiredness in the jaws more frequently than patients in the C group ($p < 0.001$).

At the onset of the subjective symptoms of CM disorders, 32% of the patients in the PA group and 6% in the C group reported that they had had TMJ pain ($p < 0.001$), 30% and 15% reported clicking ($p < 0.05$), and 23% and 3%, respectively, reported difficulties on opening the mouth wide

Table 4. Symptoms of craniomandibular (CM) disorders. Percentages of affirmative replies to the questions in the psoriatic arthritis (PA) group ($n = 110$) and in the control (C) group ($n = 110$)

Symptoms	PA group	C group	p
Morning stiffness/tiredness in jaws	16	4	***
Sounds from the TMJ	51	37	NS
Cannot open the mouth sufficiently	12	5	*
Pain in the cheeks when opening wide	17	5	**
Pain in the cheeks when chewing	15	5	*
Pain in the TMJ when opening wide	32	14	**
Pain in the TMJ when chewing	17	3	***
TMJ locking/luxation	17	9	NS
One or more of the above symptoms	62	47	***
Any discomfort from the above symptoms	52	29	**
Similar symptoms previously	51	30	***

Table 5. Coefficients of correlation (r) between the severity and the number of subjective symptoms of craniomandibular (CM) disorders and selected variables in the psoriatic arthritis (PA) group ($n = 110$) and in the control (C) group ($n = 110$)

Variable	Severity of subjective symptoms		No. of subjective symptoms	
	PA group r	C group r	PA group r	C group r
Sex (1 = man, 2 = woman)	0.07	0.37***	0.04	0.23*
Age (years)	−0.07	−0.03	−0.04	0.01
Education (1 . . . 3)	−0.006	−0.07	−0.02	0.12
Duration of PA (years)	0.17	—	0.21*	—
Severity of PA (1 . . . 5)	0.30**	—	0.27**	—
No. of joints affected by PA (1 . . . 9)	0.49***	—	0.40***	—
Nocturnal bruxism (0 . . . 2)	0.24*	0.36***	0.19*	0.23*
Diurnal bruxism (0 . . . 2)	0.31**	0.15	0.26**	0.17
Type of dentition (Table 2)	0.04	0.02	0.02	−0.03

($p < 0.001$). The mean duration of CM disorders was 4 years in the PA group and 3 years in the C group.

Of the patients in the PA group 16% and 37%, and of those in the C group 31% and 32% were aware of nocturnal ($p < 0.05$) and diurnal bruxism (NS), respectively.

Correlations (PA group)

Duration, number of joints affected, and severity of PA did not correlate significantly with one another. Arthritic and parafunctional variables correlated significantly with the severity and number of subjective symptoms of CM disorders (Table 5).

Pain in the TMJ correlated with the number of joints affected by PA ($p < 0.001$), with the severity of the PA ($p < 0.01$; Fig. 3), and with the severity and number of subjective symptoms of CM disorders ($p < 0.01$).

The severity of the PA correlated also with stiffness/tiredness in the jaws ($p < 0.05$) and with pain in the cheeks ($p < 0.05$). The number of joints affected by PA correlated with pain in the cheeks ($p < 0.001$) and with restricted opening of the mouth ($p < 0.001$).

Correlations (C group)

Sex and nocturnal bruxism correlated significantly with the severity and number of subjective symptoms of CM disorders (Table 5).

Discussion

The PA group can be considered representative of the PA patients in Finland. Thirty-eight came from the Greater Helsinki area and 72 from various other parts of Finland. In addition, 2.7% of the patients with PA had a positive Waaler–Rose test, which is close to the 1.6% found in the general population (11). Moreover, 14% of

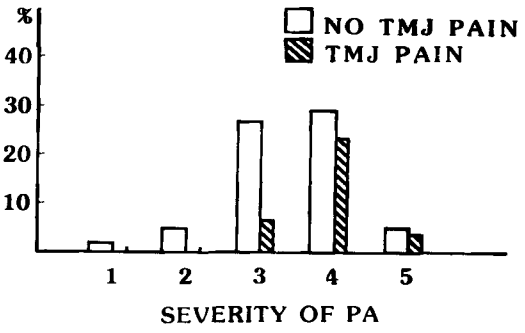

Fig. 3. Relationship between pain in the TMJ and severity of psoriatic arthritis (PA) symptoms, according to patients' own estimations ($p < 0.01$). PA group; $n = 110$. The scale used is explained in the legend to Fig. 1.

the patients had no radiographic signs typical of PA, which agrees with the results of a study by Lassus et al. (12), who in a series of 169 PA patients reported 12% with no radiographic signs. Clinically, however, other distinct signs and symptoms of arthritis were present in these patients, as they also were in the patients of the present series. Of those 15 patients (14%) with no radiographic signs of PA in the present series, 9 had had joint symptoms for an average of $1\frac{1}{2}$ years only, which may explain the lack of radiographic signs. Six had had joint symptoms for 13 years on the average, but it has been suggested that certain cases of PA are associated with no radiographic signs in the joints and bones (12). Finally, the distribution of the patients among the clinical groups in the present series agrees with that described by others (3, 13).

The C group was matched to the PA group with regard to sex, age, and dentition type. Even the educational background was similar in both groups. The comparison between the PA group and the C group is therefore justified. The PA variables did not correlate with one another, and this reflects the multifarious profile of the disease.

The mean age of 51 years in the PA group corresponds well to the mean duration of joint affections (11 years), since the age at onset is usually 36–45 years (1). In the PA group the proportion of men was higher than that of women; this has also been reported in other studies, and it may be due to the greater severity of the disease in men (14). Although there was no significant correlation between age and the subjective symptoms of CM disorders, the duration of PA correlated significantly with the number of subjective symptoms of CM disorders. The higher frequencies of neck and ear pain in the patients with PA are probably due to the involvement of neck and TMJ by PA.

Subjective symptoms were more frequently reported by the patients in the PA group than by those in the C group, but it was notably high in both groups. In the PA group the presence of symptoms was of the same order as found in a previous epidemiologic study of psoriatics with both skin and joint symptoms. With regard to the C group the presence of symptoms agreed roughly with that observed in psoriatics with skin symptoms only (15). However, the latter frequencies agree well also with recent epidemiologic findings in Finland and elsewhere (16–18). In the C group women had more frequent and more severe subjective symptoms than men, a frequent finding in TMJ patient series (19). However, in the PA group there were no differences in this respect, a fact that may be explained by PA affecting the masticatory system of both sexes equally.

The most characteristic subjective symptom of CM disorders in the patients with PA was pain in the TMJ during function; this corroborates earlier findings (7). On the other hand, restricted mouth opening was not as striking a symptom as has been found in all earlier reports, with the exception of one (20). This may be due to the fact that patients were included in the present study regardless of whether or not they had TMJ symptoms, whereas in case reports patients have been selected (5–7, 21–23). However, mandibular mobility will be studied in greater detail in a clinical part of the study.

Although occlusal parafunctions were of importance in the etiology of the subjective symptoms of CM disorders in the PA group, the correlations indicate that the general disease was the most important factor.

In the C group, nocturnal but not diurnal bruxism seemed to be an important factor in the etiology of subjective symptoms of CM disorders, which also in these patients were related mostly to the TMJ. The level of nocturnal masseter activity has been shown to correlate significantly with signs and symptoms of CM disorders (24). Given the age of the patients, the symptoms in the C group were probably also due to osteoarthrosis of the TMJ. It has also been suggested that bruxism may be an important factor in the development of osteoarthrosis (25).

Pain in the TMJ and several other subjective symptoms correlating with the severity of PA and with the number of joints affected by PA indicate that PA is the common cause of the symptoms of CM disorders in these patients. Hence, the more severe and extended the PA, the greater the risk of

TMJ involvement, and once there is TMJ involvement, the more severe are the subjective symptoms of craniomandibular disorders.

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