

A COMPARATIVE STUDY OF PAIN DESCRIPTION, EMOTIONAL DISCOMFORT AND HEALTH PERCEPTION IN PATIENTS WITH CHRONIC PAIN SYNDROME AND RHEUMATOID ARTHRITIS

Fannie Gaston-Johansson,¹ Göran Johansson,¹ Ruth Felldin² and Harald Sanne¹

From the ¹Department of Rehabilitation Medicine, the ²Department of Rheumatology, University of Göteborg, Sahlgren's Hospital, Göteborg, Sweden

ABSTRACT. The purpose of the present study was to compare pain description and emotional and psychosomatic discomfort in patients with chronic pain syndrome (CPS) and rheumatoid arthritis (RA) in order to identify special characteristic features in patients with CPS. Methods used were a Visual Analogue Scale, the McGill Pain Questionnaire, a new pain, ache and hurt assessment tool and a questionnaire related to causes of pain, health perception and experienced emotional and psychosomatic discomfort. The patients with CPS perceived themselves as being less healthy than patients with RA. While the sensory quality of pain was similar in both groups, the emotional component was stronger in patients with CPS. They experienced more emotional and psychosomatic discomfort compared to patients with RA. They believed that factors associated with their work had caused the pain. The result indicates that assessment of ache by patients with CPS on the Visual Analogue Scale reflects the affective dimension of the experience.

Key words: Pain description, health perception, emotional discomfort, chronic pain, chronic pain syndrome, rheumatoid arthritis

A comparative study between patients with chronic pain syndrome (CPS) and another group of patients with chronic pain due to a physical illness, which is not life-threatening could be of extreme value (26). Such a study could lead to the identification of characteristic features in patients with CPS and thereby give some direction to relevant areas for further research and to the development of treatment strategies.

There are only a few such studies in the literature. Blumer & Heilbronn made a comparison between patients with pain-prone disorder and patients with rheumatoid arthritis (RA) (4). They found that the two groups of patients showed significant differences in the temporal duration of pain, and that depressive traits were consistently and significantly more prevalent among pain-prone patients than among patients with RA. This study

has been criticized because the RA patients included in the study were all receiving gold therapy, a strong remission-inducing drug and thereby pain alleviating (37). This could explain why they reported more episodic rather than continuous pain. Merskey indicates that the results of the above mentioned study may have been influenced by the methods of selection of patients with pain-prone disorder (26). In addition, pain description was incomplete since Blumer & Heilbronn did not examine different dimensions of pain in the two groups of subjects.

The purpose of this paper is to present a comparative study of pain description and emotional and psychosomatic discomfort in patients with chronic pain syndrome (CPS) and rheumatoid arthritis (RA). In order to achieve the aims of the present study, the following questions will be addressed:

Do patients with chronic pain syndrome differ significantly from patients with rheumatoid arthritis with regard to

- perceived health
- descriptions of intensity, quality, location, and temporal aspects of pain/ache
- pain preoccupation
- beliefs related to the causes of pain
- factors increasing the intensity of pain
- emotional symptom and psychosomatic discomfort

SUBJECTS

Group I (CPS) consisted of 31 consecutive female patients from the outpatient department of the rehabilitation clinic, Sahlgren's Hospital. They were selected according to guidelines suggested by Yunus for primary chronic fibromyalgia (38). The pain was located paravertebral both in the cervical

and lumbar levels, shoulder girdle and the hip region. The pain was also experienced in either arms or legs or both, and in many cases described as radiating from the cervical shoulder girdle region and/or the lumbar-hip region. All patients complained of a subjective feeling of swelling, but this was not observed. All patients complained of sleep disturbances which was related to pain. No organic pathology could be found to explain the pain on radiologic examination. All patients had been seen by a specialist in orthopedic surgery who had discarded orthopedic disease as a cause of their symptomatology. To exclude inflammatory or other causes for the pain, the following laboratory tests were taken: ESR, WBC, hemoglobin, urine sedimentation and protein, rheumatoid factor, and anti-nuclear factor. To exclude patients with psychiatric diagnosis they were evaluated by a physician well experienced in psychiatry.

Group II patients with rheumatoid arthritis (RA), were selected from 2100 medical records of the rheumatological clinic at Sahlgren's hospital. The records of all female patients born 1930–1952 were examined. Patients who had 1) a definite diagnosis of RA with ≥ 5 of the criteria established by the American Rheumatology Association, 2) an illness duration of 3–13 years and 3) a functional capacity of grade II (moderate restriction, e.g. adequate for normal activities despite one or more joints engaged) were selected in order to get a group comparative to patients with CPS. Patients with RA who at that time or earlier had been treated with stronger anti-rheumatic drugs and steroids were excluded in order to avoid aggressive and fast destructive RA. A group of 35 patients were found with the above criteria and 30 accepted to be in the study. All patients were examined by a physician experienced with RA patients. The same laboratory tests taken in the patients with CPS were also taken in the patients with RA.

METHODS

Both groups of subjects were contacted by mail and asked to participate in the study. Those agreeing were scheduled to answer a questionnaire which was completed in a private room at the local hospital in the presence of one of the investigators.

Questions related to the following factors were asked:

Perceived health. This measure was obtained by the individual's self-rating of his present perceived health status indicated on a 10 cm vertical dembo line, the top of

which was written, "the healthiest I could be", and at the bottom, "the sickest I could be".

Pain intensity/quality: (a) A visual analogue scale (VAS) (17) was used. The subjects were asked to rate their pain/ache/hurt along a straight line with endpoints labelled "it doesn't hurt at all" and "pain as bad as it could be";

(b) The McGill Pain Questionnaire (MPQ) (25) was also used. It is made up of 78 descriptive pain related words divided into three major categories—sensory, affective and evaluative from which the subjects are asked to select those words which best describe their pain. The MPQ provides a qualitative and quantitative assessment of pain. The subjects choice of words are analyzed in different ways, 1) a pain rating index *PRI(R)* based on the numerical values assigned to the chosen words; 2) the number of words chosen (*NWC*);

(c) A new pain/ache/hurt (PAH) assessment tool was also used to aid in the analysis of the pain experience. Earlier studies (15, 16) have shown that there is a difference in the meaning and intensity of the words pain, ache and hurt, and that each of these three concepts have specific sensory and affective descriptors. This knowledge has been used to develop a PAH assessment tool, which is made up of three parts. In part I, the patient is asked to identify which of the three words pain, ache or hurt, best describe his discomfort. This question will classify the type of discomfort and give an overall impression of the intensity of the experience. In part II the patients are asked to select the most suitable word among a limited number of specific sensory and affective descriptors (semantic correlates) which discriminate between pain, ache and hurt. Sensory (s) and affective (a) descriptions representing the word hurt (pricking (s), pinching (s), fearful (a) and unhappy (a)) are given the value of 1. Those representing *ache* (grinding (s), gnawing (s), irritating (a) and troublesome (a)) the value of 2, and descriptors representing *pain* (cutting (s), tearing (s), killing (a) and torturing (a)) the value of 3. The subjects are asked to select one sensory and one affective descriptor which best described their PAH. This is done in order to determine (a) the quality of the experience and (b) the intensity and intensity relationship of the sensory and affective descriptors chosen. Part III consist of 4 major and 7 subcategories of the conceptual mension underlying painlike experiences which make up a classification system used to describe painlike experiences (16). It is derived from a semantic analysis of the use of the words PAH in the Swedish language. Words chosen by patients on the MPQ are classified according to the conceptual dimensions of temporal duration and dynamics, intensity, heat, and affective dimensions of pain. This is done in order to determine if patients use special categories as well as special words within the different categories to describe their PAH experience.

Pain duration. A question from the MPQ classified if the pain/ache was continuous, periodic or transient. Another question related to both intensity and time was used to find out how often pain/ache/hurt was at its worse (25).

Pain location. A picture of the front side and back side of a human figure was presented to the subjects and they were asked to shade the area which represented the exten-

sion of their pain. The shaded area was calculated to form the score for each subject. The subjects were also asked to give the number of sites where they experienced different pains/aches.

Pain preoccupation. The subjects were presented a circle with a point in the middle. They were asked to designate how much of their life was preoccupied by pain by marking out a part of the circle and shading the area in question. The shaded area was then calculated to obtain the score.

Data concerning factors related to the pain. A questionnaire was used related to the subjects' beliefs about the causes of the pain, the factors which increase the pain and number and type of medications which they were presently taking. A 4 point verbal rating scale was used to determine to what extent the subjects experienced emotional symptoms and psychosomatic discomfort.

DATA ANALYSIS AND STATISTICAL PROCEDURES

Comparisons between the CPS and the RA patients were performed with respect to 106 variables by Pitman's test (5). In order to determine whether the differences obtained at the simple comparisons of the two patient groups are explained by the correlation to other variables or whether there is a real difference when the influence of other variables are eliminated, a test technique suggested by Mantel was applied (23). The technique means that the material is subdivided with respect to the variable the influence of which should be eliminated. Within each subgroup of questions on the questionnaire the CPS and the RA patients are compared, and the results of the different groups are pooled to a test. For a variable *A*, that is correlated to e.g. four other variables, four different tests are performed eliminating the influence of each one at the other variables provided the the RA and the CPS groups differ with respect to all four variables.

For Pitman's test as well as Mantel's test the Edgeworth expansion (9) and when appropriate also the Sheppard correction (9) were used instead of the less accurate chi-square approximation suggested by Mantel (23).

The correlation between different psycho-social variables were studied within four subset of variables with the CPS/RA-variable as a background variable. The four subset of variables were patients' beliefs about the cause of the pain, factors affecting the intensity of pain, emotional symptoms and psychosomatic discomfort.

Besides the groups of psycho-social variables a group of variables describing the experience of pain

and health was studied in the same way. The subset of variables included here were: perceived health, the different dimensions of pain and pain preoccupation.

The left and right hand sides of the body were compared with respect to the number of pain regions by use of Fisher's test for pair comparisons (5). Fisher's exact test was used for comparison(s) of proportions.

RESULTS

Background data comparing CPS patients with RA patients are presented in Table I. The number of sick days two years before the investigation were higher for patients with CPS than patients with RA. The difference was significant the year prior to the investigation ($p < 0.05$). Twenty-one patients with CPS at the time of the investigation had been sick-listed for a period ranging from 11 days to 37 months with a median of 12 months. Twenty-three of the patients with CPS had less than 9 years of education, whereas there were 15 in the RA group. There were no statistical significant differences between CPS and RA groups with regard to age, number of years with ache, education, income, civil status, number of times married, number of children living at home, number receiving pension or the amount of sick compensation (Table I).

Medical history and findings

Thirteen of the patients with CPS had a past medical history of one operation and 3 with multi-operations. Seven patients with RA had a history of one operation and 2 with multi-operations. The operations ranged from minor to major in both groups. Six appendectomies had been performed in the CPS group whereas there was one in the group of patients with RA. All subjects with CPS stated that they had experienced episodes of paresthesia in the arms and legs and 50% had a subjective history of Raynaud's signs in the fingers.

All patients with RA had positive rheumatoid and anti-nuclear factors. Twelve of these patients had an ESR ranging from 21–70 with a median of 36. Otherwise all tests were normal in both groups.

Perceived health

Patients with CPS perceived themselves as being significantly less healthy ($\bar{X} = 5.64$, SD 1.94) than patients with rheumatoid arthritis ($\bar{X} = 7.83$, SD 1.42) ($p < 0.001$).

Table I. Background data for patients with CPS and RA

 \bar{X} = mean, SD = standard deviation

	CPS	RA
Number of subjects participating	31	30
Age		
Mean	42.9	42.7
Median	41	44
Range	26-55	31-54
No. of years with ache		
Mean	9.2	7.6
Median	7	7
Range	1-31	3-13
Civil status		
Single	5	5
Divorced	9	6
Married	17	18
Widowed	0	1
Education		
Elementary school <9 yrs	23	15
Completed elem. school 9 yrs	4	6
High school	3	7
College	1	2
Occupation		
Service	8	6
Blue collar	2	0
Transport/communication	1	1
Commercial	1	3
White collar/office	7	11
Humanistic	6	5
Housewife	4	4
Pension		
Part time	4	3
Full time	6	6
Income, Sw. kr		
Mean	47.723	52.513
Median	45.000	51.000
Range	0-119.000	0-160.000
Sick compensation, Sw. kr (per day) (\bar{X})	82	91
No. of reported sick days (\bar{X} ±SD)		
1981	124±138.05	66±113.56
1982	133±143.96*	52±102.04
No. of years employed		
Mean	18	17
Median	18	15
Range	3-37	4-34

* $p < 0.05$.

Pain/ache

Intensity, classification, quality. The "usual" pain in CPS patients was classified as being of a significantly higher intensity on the MPQ with regard to the affective dimension than "usual" pain in RA

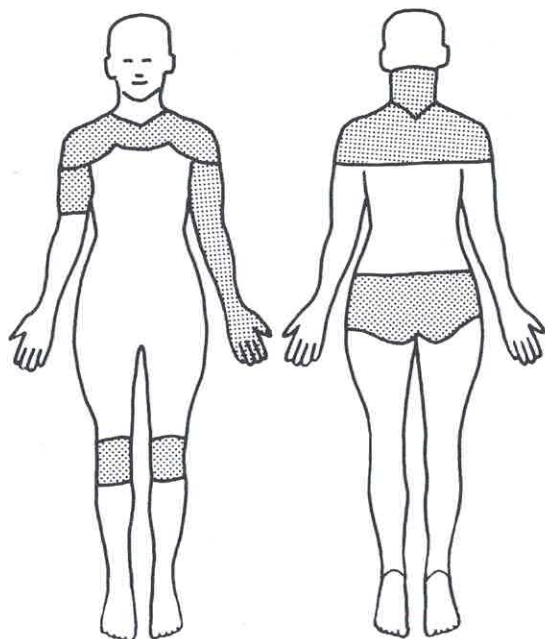


Fig. 1. Most common locations of ache in patients with chronic pain syndrome.

Table II. A comparison of the intensity of pain/ache between patients with CPS and RA measured on the MPQ and VAS

The Fisher Permutation Test was used

	CPS (mean±SD)	RA (mean±SD)
<i>McGill Pain Questionnaire</i>		
Number of words chosen		
Sensory	5.68±2.84	4.60±2.51
Affective	2.48±1.50**	1.53±1.07
Evaluative	0.90±0.31	0.90±0.31
Miscellaneous	2.42±1.20*	1.67±1.18
Total	11.45±4.63*	8.70±4.12
Pain rating index (rank) (PRI(R))		
Sensory	12.32±6.07	9.77±5.82
Affective	4.10±3.13***	1.73±1.39
Evaluative	2.68±1.49	2.03±1.22
Miscellaneous	5.65±3.70**	3.17±3.17
Total	25.29±11.74**	16.70±9.08
<i>Visual Analogue Scale</i>		
Your pain right now	5.00±2.51**** ^a	1.61±1.82
Your usual pain	5.39±1.97**	3.17±2.01

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.^a Variable independent of another variable in its correlation to CPS/RA.

Table III. A. comparison of most frequent words chosen by patients with CPS (n=31) and RA (n=30) to describe the quality of their pain-like experience

Words that are overrepresented by 7 or more in one group of patients are indicated

Conceptual dimension	Most frequent words chosen			
	CPS	No. of persons choosing	RA	No. of persons choosing
<i>Sensory</i>	<i>Continuous</i>	27	Continuous	12
Duration	Periodic	4	<i>Periodic</i>	18
Dynamics	Grinding	19	Grinding	14
	<i>Radiating</i>	16	Radiating	3
<i>Intensity</i>				
Analogous with use of instruments	<i>Stabbing</i>	12	Stabbing	4
	Gnawing	8	<i>Gnawing</i>	15
	Cutting	10	Cutting	10
Analogous with bodily tension	Stiff	17	Stiff	22
	<i>Tense</i>	20	Tense	9
<i>Heat</i>	<i>Burning</i>	16	Hot	9
<i>Affective</i>				
Physiological	Tiring	23	Tiring	18
	<i>Sickening</i>	12	Sickening	4
Emotional	Despair	11	Despair	6
Evaluative	Troublesome	14	Troublesome	11
	<i>Painful</i>	17	Painful	9

patients both by the NWC ($p < 0.01$) and the PRI(R) ($p < 0.001$) (Table II). There was, however, no significant difference in the intensity of pain between the groups with regard to sensory and evaluative dimensions of pain. The intensity of pain/ache was significantly higher in patients with CPS with regard to the total NWC ($p < 0.05$) and the total PRI(R) ($p < 0.01$) on the MPQ.

"Present" and "usual" pain/ache assessed by VAS, was significantly higher in patients with CPS than patients with RA ($p < 0.001$).

Twenty-seven of the patients with CPS classified their present discomfort as ache and 3 as hurt. Twenty of the RA patients classified their discomfort as ache and 8 as hurt.

The results of part II of the PAH assessment tool revealed that patients with CPS selected affective descriptors ($\bar{X} = 2.4$, SD 0.51) with a significantly higher intensity than patients with RA ($\bar{X} = 2.0$, SD 0.00) to describe their "usual" pain/ache ($p < 0.01$). There was no significant difference between the groups with regard to intensity rating of sensory descriptors.

Table III shows the different categories (part III of the PAH assessment tool) and words chosen by patients with CPS and RA from the MPQ to de-

scribe the quality of their ache. Words that are overrepresented by seven or more in one group of patients are indicated. Compared with RA patients, patients with CPS experienced a continuous, radiating, stabbing, tense, burning, sickening and painful ache. The ache in patients with RA is more periodic and gnawing than in patients with CPS.

Duration. Five of the patients with CPS had experienced pain/ache for less than 3 years and 6 for more than 13 years. Patients with CPS had a significantly longer temporal duration than the patients with RA ($p < 0.01$). Twenty patients with CPS in comparison to 12 patients with RA described their pain as being at its worse more than twice a day.

Location. A significantly greater percentage of body surface area involved with ache was found in patients with CPS (mean $\bar{X} = 26.4$, SD 16.4) than in patients with RA ($\bar{X} = 12.2$, SD 8.6) ($p < 0.001$) and the number of different location sites were also significantly greater in patients with CPS ($\bar{X} = 6.5$, SD 2.3) than in patients with RA ($\bar{X} = 5.1$, SD 1.5) ($p < 0.05$). The amount of bodily surface area covered with pain was significantly correlated to temporal duration and number of pain sites. Fig. 1 and 2 show a drawing of the 7 most common pain location areas found in patients with CPS and RA.

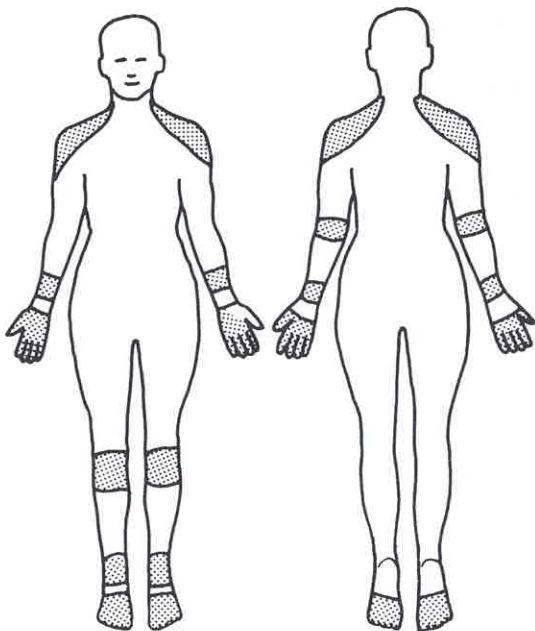


Fig. 2. Most common locations of ache in patients with rheumatoid arthritis.

The most common location according to answers in the inquiry were joints, muscles and bones in both groups. Patients with CPS also reported that they believed that the ache was located in the nerves.

Pain pre-occupation. Patients with CPS reported that a significantly greater portion of their life was pre-occupied by pain/ache ($\bar{X}=204$, $SD=84.7$) than patients with RA ($\bar{X}=104$, $SD 96.2$) ($p<0.001$).

The difference between the two groups with respect to pain/health variables

When the effects of the different variables were eliminated, the following ones remained significantly, differentiating patients with CPS from RA: 1) pain/ache intensity at the time of the investigation measured by the VAS (CPS higher than RA); 2) body surface area involved with ache (CPS larger than RA), 3) conception about health (CPS perceived themselves as being less healthy than patients with RA).

Medication

There was no significant correlation between the amount of ingested medicine and the patients' ratings of the intensity of ache on the VAS and on the total score of the MPQ. Seven patients with CPS and two patients with RA did not take any medications. Eighteen patients with CPS were taking anal-

Table IV. Comparison between presumptive causes of pain in patients with CPS and RA

The number of subjects within each group selecting a particular factor is given (CPS $n=31$, RA $n=30$)

What do you think is the cause of your pain?	No. of subjects selecting		Significant levels
	CPS	RA	
<i>Physical causes</i>			
Accident at work	4	1	NS
Accident at home	1	1	NS
Some other accident	6	1	**
Infection	4	22	****
Disease	3	5	NS
Heridity	5	12	NS
Draft	8	5	NS
Physical heavy work	18	3	****
Repetitive movements	15	2	****
Stretching	4	2	NS
<i>Psycho-social causes</i>			
Conflict in the family	2	3	NS
Conflict at work	1	1	NS
Dull job	3	2	NS
Stressful job	15	6	***
Unpleasant work conditions	4	0	NS
High demands from others	5	3	NS

* $p<0.05$. ** $p<0.01$. *** $p<0.001$.

^a Variable independent of another variable in its correlation to CPS/RA.

gesics with both central and peripheral effects in comparison with 4 patients with RA. Fourteen patients with RA were taking analgesics with peripheral effects in comparison with 8 patients with CPS.

Patient beliefs about causes of pain

All subjects with CPS stated that they had not been given a medical diagnosis, which could account for the pain. All patients with RA were aware of their medical diagnosis. As can be seen in Table IV after eliminating the effects of the different variables upon each other, CPS patients believed to a significantly higher degree than patients with RA that physical heavy work and repetitive movements were responsible for the pain ($p<0.001$) as well as accidents occurring some other place than at home and work caused their pain ($p<0.05$). RA patients believed to a significantly higher degree that infection caused the pain ($p<0.001$).

Factors increasing pain/ache

Patients with CPS, in comparison with patients with RA, reported significantly more frequently

Table V. A comparison of factors which increase pain/ache in patients with CPS and RA

The number of subjects within each group selecting a particular factor is given (CPS n=31, RA n=30)

Factors	Subjects		Level of significance
	CPS	RA	
Alcohol	1	6	NS
Coffee	1	4	NS
Food	1	6	NS
Heat	3	9	NS
Cold	28	15	*
Dampness	20	21	NS
Change of weather	22	24	NS
Movement	18	13	NS
Rest	1	1	NS
The sitting position	15	6	** ^a
Lying down	2	3	NS
Changing position	6	8	NS
Going to work	16	5	*** ^a
Being alone	1	1	NS
Feeling low	7	11	NS
Stressful situations	16	9	NS
Menstruation	15	10	NS
Looking at TV	7	4	NS
Reading	5	4	NS
Massage	5	1	NS
TNS	1	0	NS
Stretching	12	4	NS
Physical exercise	18	6	** ^a

* $p < 0.05$. *** $p < 0.001$.

^a Variable independent of another variable in its correlation to CPS/RA.

Table VI. Comparison of emotional symptoms between CPS patients and RA

The number of subjects within each group selecting a particular factor is given (CPS n=31, RA n=30)

Have you lately felt (very much/ to some extent)	No. of subjects selecting		Significant level
	CPS	RA	
Depressed	13	9	*
Restless	12	4	(***) ^a
Nervous	12	3	
"Emotional"	10	2	
Irritable	13	4	*
Anxiousness	7	3	NS
Easily fatigued	18	10	**
Lack of initiative	9	3	*
Lack of appetite	7	2	*
Isolated	10	3	*
Easy to cry	8	5	NS

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

^a Group of variables independent of other variables in its correlation to CPS/RA.

Table VII. Comparison of psychosomatic discomfort between CPS patients and RA patients

The number of subjects within each group of subjects selecting a particular factor is given (CPS n=31, RA n=30)

Do you often experience (very much/ to some extent)	No. of subjects selecting		Significant level
	CPS	RA	
Headache	21	8	*** ^a
Fainting attacks	3	2	NS
Gastritis	12	9	NS
Nightmares	8	2	NS
Difficulty to relax	22	6	*** ^a
Sensations of stress	13	9	NS
Indecision	12	6	NS
Feelings of inferiority	14	3	**
Sleeping problems	20	13	*
Impaired concentration	15	8	*
Difficulty to remember	18	7	** ^a

* $p < 0.05$. ** $p < 0.01$. *** $p < 0.001$.

^a Variable independent of another variable in its correlation to CPS/RA.

that cold, sitting, physical exercise and their work increased the pain/ache (Table V). When the influence of the different variables upon each other was eliminated, the remaining factors significantly differentiating the groups from each other were: the sitting position, physical exercise and going to work.

Emotional symptoms

Patients with CPS experienced significantly more mental discomfort than patients with RA (Table VI). The variables depressed, restless, nervous, emotional, irritable, easily fatigued, lack of initiative, lack of appetite and isolated were all correlated to each other. After eliminating the influence of the different mental variables upon each other, it was found that the patients with CPS were significantly more restless, nervous, and "emotional" ("feelings are easily affected") than the patients with RA.

Psychosomatic discomfort

As can be seen in Table VII, patients with CPS experienced headache, difficulty in relaxing, feelings of inferiority, sleeping problems, impaired concentration and difficulty in remembering significantly more often than the patients with RA. After removing the influence of the different variables upon each other, the remaining variables were

Table VIII. Characteristics of patients with CPS which significantly differentiate them from patients with RA

Characteristic features of patients with CPS
Pain-health
higher ache intensity (associated with a high emotional component of ache)
Lower perceived health
Larger bodily area involved with ache
Causes of pain
Accidents outside the home and work
Physical heavy work
Repetitive movements
Factors increasing pain
sitting
going to work
Emotional Symptoms
Restlessness
Nervousness
"emotional" (feelings are easily hurt)
Psychosomatic discomfort
headache
difficulty to relax
difficulty to remember

headache, difficulty to relax and difficulty to remember.

Summing up of results

An overview of characteristics of patients with CPS, where variables independent of another variable distinguish them from patients with RA is presented in Table VIII. All characteristics are significant at the $p < 0.001$ level except for restless ($p < 0.01$), accidents outside the work ($p < 0.05$) and difficulty to remember ($p < 0.05$).

DISCUSSION

Subjects

Patients are admitted to the rehabilitation clinic which is devoted to treating patients with mainly somatic disturbances. They are referred because of chronic pain and because of long periods of sick listing. They come from other hospital departments, general practitioners, and occupational medicine. This means that selection patterns most likely were not because patients had previously experienced "emotional" symptoms or psychosomatic discomfort. A factor which might have influenced selection of patients with CPS is the time they had been sick-listed.

In order to find a homogeneous group of patients in dealing with CPS, guidelines suggested for chronic primary fibromyalgia were chosen (38). No cases of mixed or secondary fibromyalgia were observed. In this way the group of patients with CPS were rather well defined.

The term CPS certainly refers to heterogeneous groups of patients who most likely cannot be accurately distinguished from each other. Other terms often used as synonyms to CPS are: pain-prone disorder (4, 11), psychogenic pain disorder (11), idiopathic pain disorder (37) and operant pain (13). The scientific literature is somewhat confusing with regard to the classification of patients with chronic pain, where no organic cause is found to account for the pain. There is, however, general agreement that the term chronic pain refers to patients who experience pain for six months or more regardless of the cause (2), or any pain initially caused by trauma that persist longer than would be normal for healing of the tissue involved (12, 13).

The patients with RA had at least five of the criteria established by ARA for the diagnosis, which includes a positive test for RA factor. No patients with deformity were selected for the RA group as this confer to the patients quite other consequences than the mere pain and would have made a comparison between the two groups impossible.

The two groups of subjects (CPS, RA) were similar with regard to most demographic and social background data which had made it possible to control to some extent intervening variables.

Pain intensity

The patients did not report any difficulties with respect to selecting words on the MPQ or the PAH assessment tool. They seldom asked questions regarding the meaning of the different words. The subjects had the possibility of getting the words explained to her by one of the authors, so the risk of misunderstanding was reduced to a minimum. This also contributed to that there was no missing data. The findings from this study, with regard to the quality and intensity ratings of ache on the MPQ and the pain, ache, hurt assessment questionnaire, are based on the Swedish language. This places restrictions on the generalization of these results to other cultures and languages.

The three methods used to assess pain discomfort made it possible to compare intensity ratings as

well as to analyze the sensory and affective dimensions of ache. The simple question: "Which word best describes your experience *pain*, *ache* or *hurt*?" not only classified the type of experience in question but it also gave a rough estimation of intensity. Both groups of patients indicated that they experienced ache. The fact that the MPQ and pain assessment tool II showed that there was no significant difference between the groups with regard to the sensory component of pain/ache and that patients with CPS had a significant higher affective component of ache than RA, gives support to a continued development of a simple and practical PAH assessment tool.

Patients with CPS on an average rated their ache higher on the VAS in comparison to RA patients. Fordyce (14) suggests that patients may be communicating a different sensation than pain with their ratings on the VAS, e.g. it can be anxiety or tension. This may possibly explain some of the high intensity ratings which were found in patients with CPS. Our results indicate that assessment of ache by the patients with CPS on the VAS reflects the affective dimension of the experience, since this dimension on the MPQ and PAH assessment tool accounted for the significant difference in intensity ratings between the two groups of patients.

Other authors (18, 24) have indicated that high intensity ratings on the affective or evaluative dimension of the MPQ may be used to predict emotional and self-reported behavioral disturbances in chronic pain patients, although Toomey and co-workers (35) were not able to verify this finding.

Duration and quality

Other studies suggest that patients with CPS without demonstrable organic disease describe their pain as burning, aching and shooting (36) more exhausting (6), more diffuse and tense (3, 7, 21, 22) and use more evaluative words on the MPQ (28) than other patients with chronic pain. Our findings show that at least 40% of the patients with RA choose the same words to describe their pain as patients with CPS. The words burning and tense were more frequently chosen in the CPS group. The word shooting was rarely chosen.

It is interesting to note that only 18 patients with RA described their pain as periodic and that temporal duration of pain was not a variable independently correlated to the CPS/RA variable.

Pain location

Our results indicate that the amount of body surface area involved with ache is a more relevant variable to assess than the number of pain sites since the former variable was independently correlated to the "CPS/RA" variable. Von Baeyer (1), however, did not find pain-drawing test to be a valid means for screening for psychological involvement associated with the pain complaint. Toomey and co-workers (35) found that patients with a large number of pain sites had a greater degree of emotional disturbances and suggest that spatial distribution of pain sites may be a useful clinical diagnostic indication of psychological disturbances in chronic pain patients. Our results also indicate that patients with CPS have a higher number of pain sites.

Emotional symptoms and psychosomatic discomfort

Emotional and psychosomatic symptoms which characterize patients with CPS are: restlessness, nervousness, "emotional", headache, difficult to relax and difficult to remember. These symptoms appear to be descriptive of an emotional state which is different from that of depression. The symptoms fatigue, lack of appetite, irritability, feeling low, isolated, lack of initiative which are more typical for depressive states (31, 32, 33, 34) were not independently correlated to the variable CPS/RA. Our findings are therefore not in accordance with those of Blumer and Heilbronn (4) who identify depression as a special characteristic feature in patients with CPS. Earlier empirical findings have not either shown depression to be an outstanding phenomenon in patients with CPS (8, 10, 20, 27, 29, 30).

Perceived health

It is understandable that patients with CPS have a lower health perception than patients with RA since they have a higher ache intensity, and a larger body area involved with ache. Furthermore, twice as many patients with CPS report emotional symptoms and psychosomatic discomfort than patients with RA. However, since health is a multidimensional concept, there may be factors other than experienced symptoms that are related to one's health perception, i.e. functional capacity, job satisfaction.

Our results indicate that physical heavy work and repetitive movements may be risk factors in the development of CPS. Kvarnström (19) has also found a correlation between these factors and chronic pain patients. The sitting position and going to work may increase the intensity and severity of this condition. Future prospective studies designed to follow individuals who are working in jobs associated with the above factors could lead to early detection as well as to identification of other risk factors and early treatment.

The results of the present study give increased insight into the relevant variables which are characteristic for patients with CPS in comparison to patients with RA. These limited number of variables give direction for future research and for the development of treatment strategies, which may be helpful for patients with CPS.

A variety of instruments have been used to assess pain taking into account both qualitative and quantitative methods. These instruments made it possible to determine that the emotional component, rather than the sensory component of pain, was responsible for the higher intensity of pain in CPS patients in comparison to RA patients.

The comparison between the different methods used to assess pain (VAS, MPQ, PAH questionnaire) seems to strongly suggest that the VAS is measuring the emotional component of pain. A new PAH instrument was used in this study. By this instrument 12 selected word descriptors gave the same results with regard to the assessment of sensory and affective components of pain, as the 78 word descriptors on the MPQ.

ACKNOWLEDGEMENTS

This work was supported by a grant from the Swedish Medical Research Council (Grant No. B85-27p-6902-02B), the National Association for Rheumatism and the B. Hansson Fond.

We wish to thank Marianne Asklund-Gustafsson, R. N., B. S. for her assistance with coding of the data and Anders Odén, Ph.D. for his help with the statistical analysis.

REFERENCES

1. von Baeyer, C., Bergström, K., Brodwin, G. & Brodwin, S.: Invalid use of pain drawings in psychological screening of back pain patients. *Pain* 16:103-107, 1983.
2. Belar, C. D.: Stress management of chronic pain. *J Florida M A* 67/5:487-490, 1980.
3. Black, G.: The chronic pain syndrome. *Surg Clin North Am* 55:999-1011, 1975.
4. Blumer, D. & Heilbronn, M.: Chronic pain as a variant of depressive disease. The pain-prone disorder. *J Nerv Ment Disease* 170/7:381-394, 1982.
5. Bradley, J. W.: *Distribution-free Statistical Test*. Prentice-Hall, London, 1968.
6. Brown, T., Nemiah, J., Barr, J. & Barry, H.: Psychologic factors in low-back pain. *N Engl J Med* 251:123-128, 1954.
7. Chapman, C.: Psychological aspects of pain patient treatment. *Arch Surg* 112:767-771, 1977.
8. Chapman, R., Sola, A. & Bonica, J.: Illness behavior and depression compared in pain center and private practitioners. *Pain* 6:1-7, 1979.
9. Cramér, H.: *Mathematical Methods of Statistics*. University Press, Princeton, 1946.
10. Delaplaine, R., Iffabumuyi, O., Merskey, H. & Zarfes, J.: Significance of pain in psychiatric hospital patients. *Pain* 4:361-366, 1978.
11. Engel, M. D. & George, L.: "Psychogenic" pain and the pain-prone patient. *Am J Med* 26:899-918, 1959.
12. Florence, D. W.: The chronic pain syndrome. A physical and psychological challenge. *Postgrad Med* 70/5:217-228, 1981.
13. Fordyce, W. E.: A behavioural perspective on chronic pain. *Br J Clin Psychol* 21:313-320, 1982.
14. Fordyce, W. E., Lansky, D., Calsyn, D., Shelton, J., Walter, C., Stoloy, W. & Rock, D.: Pain measurement and pain behavior. *Pain* 18:53-69, 1984.
15. Gaston-Johansson, F.: Pain assessment: Differences in quality and intensity of the words pain, ache and hurt. *Pain* 20:69-76, 1984.
16. Gaston-Johansson, F.: Pain assessment: Model construction and analysis of words to describe pain-like experiences. Accepted for publication in *J Int Assoc Semiotic Studies*, 1985.
17. Huskisson, E. C.: Measurement of pain. *Lancet* 9:1127-1131, 1974.
18. Kremer, E. F. & Atkinson, J. H.: Pain measurement construct validity of the affective dimension of the McGill Pain Questionnaire with chronic benign pain patients. *Pain* 11:93-100, 1981.
19. Kvarnström, S.: Occurrence of musculoskeletal disorders in a manufacturing industry—with special attention to occupational shoulder disorders. *Scand J Rehab Med, Suppl.* 8:1-114, 1983.
20. Large, R.: The psychiatrist and the chronic pain patient: 172 anecdotes. *Pain* 9:253-263, 1980.
21. Leavitt, F., Garron, D., Charles, M., D'Angelo, C. & McNeill, T.: Low back pain in patients with and without demonstrable organic disease. *Pain* 6:191-200, 1979.
22. Leavitt, F. & Garron, D.: Psychological disturbance and pain report differences in both organic and non-organic low back pain patients. *Pain* 7:187-195, 1979.
23. Mantel, N.: Chi-square test with one degree of freedom; Extensions of the Mantel-Haenszel procedure. *J Am Statistical Assoc* 58:690-700, 1963.
24. McCreary, C., Tuner, J. & Dawson, E.: Principal dimensions of the pain experience and psychological disturbance in chronic low back pain patients. *Pain* 11:85-92, 1981.

25. Melzack, R.: The McGill Pain Questionnaire: Major properties and scoring methods. *Pain* 1:277-299, 1975.
26. Merskey, H.: Comments on "Chronic pain as a variant of depressive disease: The pain-prone disorder". *J Nervous Mental Disease* 170:409-411, 1982.
27. Merskey, H.: The characteristic of persistent pain in psychological illness. *J Psychosom Res* 9:291-298, 1965.
28. Oostdam, E. M. M. & Duivenvoorden, H. J.: Description of pain and the degree to which the complaints fit the organic diagnosis of low back pain. *Pain* 18:71-82, 1984.
29. Pilowsky, I., Chapman, C. & Bonica, J.: Pain depression and illness behavior in a pain clinic population. *Pain* 4:183-191, 1977.
30. Ranjan, R.: Many faces of depression in patients with chronic pain. *Int J Psychiatry in Med* 12/2:109-118, 1982-83.
31. Skevington, S. M.: Activities as indices of illness behavior in chronic pain. *Pain* 15:295-307, 1983.
32. Sternbach, R. A.: Chronic pain as a disease entity. *Triangle* 20, No. 1/2, 1981.
33. Sternbach, R.: Psychological aspects of chronic pain. *Clin Orthop* 129:150-155, 1977.
34. Sternbach, R.: Psychological factors in pain. In *Advances in Pain Research and Therapy* (ed. J. J. Bonica), pp. 293-299. Raven Press, New York, 1976.
35. Toomey, T., Gover, V. & Jones, B.: Spatial distribution of pain: a descriptive characteristic of chronic pain. *Pain* 17:289-300, 1983.
36. Walters, A.: Psychogenic regional pain alias hysterical pain. *Brain* 84:1-18, 1961.
37. Williams, J. B. W. & Spitzer, R. L.: Idiopathic pain disorder: a critique of pain-prone disorder and a proposal for a revision of the DSM-III category psychogenic pain disorder. *J Nerv Ment Dis* 170/7:415-419, 1982.
38. Yunus, M., Masi, A., Calabro, K., Miller, K. & Feigenbaum, S.: Primary fibromyalgia (fibrositis): Clinical study of 50 patients with matched normal controls. *Seminars in Arthritis and Rheumatism*, Vol. XI, No. 1, 1981.

Address for offprints:

Fannie Gaston-Johansson
Department of Rehabilitation Medicine
Sahlgren's Hospital
Bruna stråket I
S-413 45 Göteborg, Sweden