

DEGENERATIVE DISEASES OF THE CERVICAL  
AND LUMBOSACRAL SPINE WITHIN THE  
COMPLEX OF GENERAL DISABILITY

L. KRAPAC,<sup>1</sup> J. ZERGOLLERN,<sup>2</sup> M. MALINAR<sup>1</sup> and R. ČAPETA<sup>3</sup>  
*Institute for Medical Research and Occupational Health,<sup>1</sup> Orthopaedic  
Department G. H. »J. Kajfeš«,<sup>2</sup> and Self-Managed Community of Interest for  
Pension and Disability Insurance of Workers in SR Croatia,<sup>3</sup> Zagreb*

(Received for publication March 15, 1983)

From a sample of workers declared as disabled during 1981, 111 males and 36 females were selected in whom a rheumatic disease was one of the first two diagnoses on the basis of which the respective commissions declared them as disabled. The average age of the workers was  $52 \pm 6.17$  years, and length of active work  $25.9 \pm 7.18$  years. Of the 147 examinees 29% were unskilled workers, 40% were skilled, and 14% highly skilled workers, while 17% of the disabled in the sample were employees. Rheumatic complaints were the main cause of disability in 31.3% of the examined persons. Pain in the cervical part of the spine was registered in 48.9%, and in the lumbo-sacral part in 88.5% of the examinees. Compressive radicular syndrome of the cervical spine of a moderate or serious degree was diagnosed in 23.2%, and the syndrome of the lumbo-sacral spine in 67.7% of the examinees. A positive Lazarević-Laseque sign was registered in 24.5% of the disabled — in 8.2% of them on both sides.

As regards the capacity of work of these disabled persons, 58.5% of them were found to be totally unfit for work; 21.8% were found to be able to do some other work; and 19.7% were found to have been pensioned off prematurely because of a rheumatic complaint.

The possibilities are discussed of the prevention and treatment of myelo-radicular compressive syndromes as very frequent causes both of temporary and of permanent disability.

Although degenerative diseases of the spine and the joints of the extremities are comparatively frequent in general population (1—8) and thus also in working population (1—12), comparatively little has been written on these diseases in this country, especially as regards the work of rheumatic patients (13—26). The great socio-economic importance of

these diseases and the growing incidence of pains in the cervical and lumbosacral spine leading to partial or total work disability prompted us during 1981 to intensify observation of the growing incidence of degenerative rheumatic changes in the cervical and lumbar spine on a sample of disabled workers.

#### SUBJECTS AND METHODS

From a total of 12289 persons, who in Croatia during 1981 were registered as disabled workers of what is termed 1st category, i. e. as totally unfit for their respective jobs or any other work, we selected 111 men and 36 women (27). The criterion for the selection was that rheumatic complaints was one of the first two diagnoses on the basis of which these persons were declared as disabled. The average age of the examinees was  $50.2 \pm 6.2$  years (ranging from 30—60 years) and average period of active work  $25.9 \pm 7.2$  years (range 9—38 years). Of the examinees 29% were unskilled workers, 40% were skilled workers, and 14% highly skilled, while 17% of them were employees. Table 1 shows the main causes of disability to be very similar to the data on general morbidity collected during the investigations carried out by Mimica and co-workers (22, 23, 28).

The examinees were summoned by post to report for examination and advised to bring with them their latest medical reports and X-ray photos. During the examinations at the Centre for Assessment of Work Ability of the Institute for Medical Research and Occupational Health in Zagreb, where the data were entered into a standardized questionnaire, we established from the case histories that six examinees claimed to suffer from motor impairment and 38 from some trauma, while one of the examinees had bone and joint tuberculosis. Only 42 of the examinees (i. e. 28.6%) referred also to positive family rheumatological anamneses. From the case histories we learned that 72 examinees suffered pains in the cervical spine, and 130 in the lumbosacral region.

#### RESULTS

Data on the medical treatment of the examinees until their retirement as disabled pensioners indicate that most of them (77.6%) had been treated as ambulatory patients. Only 48.3% of the examinees had taken specialist conservative treatment (various kinds of physical therapy), and 13.6% had undergone surgical treatment for diminishing the symptoms of degenerative changes of the cervical and lumbosacral spine. Not more than 49.7% of the examinees had utilized rehabilitative measures during their illness.



Table 1  
*Primary disease causing disability in 147 disabled workers*

Diagnosis	Number of disabled	Per cent
Hypertension	16	10.9
Cardiovascular diseases	22	15.0
Rheumatic diseases	46	31.3
Psychoneurotic problems	35	23.8
Broncho-pulmonary diseases	9	6.1
Gastro-intestinal diseases	9	6.1
Uro-genital diseases	3	2.0
Diabetes	3	2.0
Sight impairments	2	1.4
Other diseases (carcinoma, generalized eczema)	2	1.4
Total	147	100%

Tables 2 and 3 contain data on the rheumatological diagnoses which were accepted by the Commission for the Assessment of Disability as relevant in the development of permanent disability. As much as 90% of the disabled persons in our sample had affected cervical and/or lumbosacral spines. We found that 45% of the cases were only slight types of degenerative rheumatic changes and that in 35% of the examinees disability had partly been caused by major changes in the cervical and lumbosacral spine. However, these data should be viewed in the light of the fact that rheumatic complaints had not been the exclusive cause of disability but that they were the initial cause of disability in 31.29% of

Table 2  
*A rheumatic disease as the first diagnosis*

		N = 147	%
Cervical spine	Slight case	22	15.0
	Severe case	12	8.2
Lumbosacral spine	Slight case	58	39.5
	Severe case	40	27.2
Arthroses		9	6.1
Gout		3	2.0
Rheumatoid arthritis		3	2.0

Table 3  
*A rheumatic disease as the second diagnosis*

		N = 111	%
Cervical spine	Slight case	39	35.1
	Severe case	3	2.7
Lumbosacral spine	Slight case	38	34.2
	Severe case	8	7.2
Arthroses		20	18.0
Gout		2	1.9
Rheumatoid arthritis		1	0.9

the examinees. Similar data are presented for the second rheumatological diagnosis made in our outpatient department (Table 3) where changes in the cervical and lumbosacral spine were found in 80% of the total number of 111 disabled persons in whom yet another rheumatic disease was diagnosed. Apart from these rheumatological diagnoses we found in 34 patients (or 23%) symptoms of polyneuropathy, mostly caused by ethyl (in 31 persons), and — in 3 cases — by diabetes; blood circulation disorders in the lower extremities were established in 45 patients.

In gait analyses which we carried out on every examinee we noticed that 17 are lame in the left leg and the same number in the right leg, while unsteadiness on both legs was observed in 53 of the examinees. 25 examinees had definitely flat feet; difficulties in walking on the heels were registered in 59 examinees; and 38 examinees had difficulties in walking on their toes. Data on the type, function, muscle tonus, and diseases of the cervical and lumbosacral spines are shown in Table 4. Trophical changes in the shoulder muscles were observed in only one of the examined disabled persons, changes in one hand also in one, in both hands in two, while trophical changes in the muscles of one leg were observed in 12 examinees, and in both legs in 6 examinees. 24.55% of the disabled examinees had a positive Lazarević-Lasegue symptom, 8.2% of them on both sides.

Table 5 gives information on the extent to which the examinees were making use of orthopaedic aids. Only 18.4% utilized some orthopaedic aid, mostly a walking-stick, while other orthopaedic aids were in comparatively little use by those in whom rheumatic complaints were one of the main causes of their disability.

The doctor responsible for the assessment of disability in our rheumatological out-patient department — on the basis of the work history, the data supplied by the Disability Commission, and the clinical examin-

Table 4

*Some data on the clinical examination of the cervical and lumbosacral spines of 147 disabled persons (percentages given in brackets)*

	Degree of change	Morphological changes	Diminished functions	Hypertonus of the muscles	Pain symptoms
Cervical spine	Slight	55 (37.4)	60 (40.8)	55 (37.4)	54 (36.7)
	severe	10 ( 6.8)	12 ( 8.2)	8 ( 5.4)	18 (12.2)
Lumbosacral spine	Slight	91 (61.9)	60 (40.8)	78 (53.0)	82 (55.8)
	severe	30 (20.7)	41 (27.9)	38 (25.9)	48 (32.7)

Table 5

*The use of orthopaedic aids by disabled workers*

	N = 147	%
Orthopaedic insoles	5	3.4
Orthopaedic shoes	5	3.4
Walking-stick	11	7.5
Crutch	1	0.7
Schanz's tie	3	2.0
Corset	2	1.4
Total	27	18.4

Table 6

*Re-assessment of the work ability of disabled workers of the 1st category*

	N = 147	%
No work ability	34	23.1
Work ability greatly diminished	52	35.4
Change of job necessary	32	21.8
Fit for work with reduced working time	25	17.0
Full work ability	4	2.7



ation and laboratory and radiological findings — gave a re-assessment of the work capacity of those registered as disabled of the list category, i. e. of those who have residual work ability either for their particular occupations or any other work.

Table 6 shows that in fact one fifth of these disabled persons still have a capacity for work — either a full one (only 2.7%) or a diminished one, i. e. for work with shortened working time (17%). Table 7 shows data on the types of therapy which could have a favourable effect not only on the capacity for work of disabled persons but also on the quality of their lives. According to the rheumatologist-physiatrist, in only

Table 7  
*Treatment which may have a favourable effect on the work ability of disabled workers*

	N = 147	%
Physical therapy	88	59.9
Physical and medicamentous therapy	14	9.5
Surgical and physical therapy	26	17.7
Surgical therapy	3	2.0
Medicamentous therapy	2	1.4
No therapy	14	9.5

9.5% of the examined disabled persons no favourable results could be expected from any known therapy for degenerative diseases of the spine and the joints. In view of the fact that on the average the first indications of degenerative rheumatic diseases of the spine or the joints of the extremities became apparent fourteen years ago, the question must be posed whether these patients had completed their therapy or whether physical, medicamentous or surgical therapy, or combinations of these therapies, should be continued. Data on congruency between the radiological findings and the clinical picture show that the radiograms of 65.3% of the examinees were fully identical with the clinical picture of degenerative changes; in the case of 25.8% of the examinees the radiograms were partly identical; and only in 1.4% of the examinees did the radiograms show a total divergence from the severity of the clinical picture. Two examinees did not possess radiograms of their spines and the joints of their extremities.

#### DISCUSSION

Data on the morbidity of the examined group of disabled workers largely agree with those on the general morbidity of the country's popula-

tion which were collected during the investigations by *Mimica* and co-workers (22, 23, 28). As regards skill and occupation of the examinees, just as in earlier investigations no definite connection was observed between heavy manual work and a higher incidence of radicular symptoms of the cervical and lumbosacral spine (12, 22).

The objective clinical findings and the examinees' anamnestic statements were almost identical, while findings of objective pain tests and the hypertonus of the paravertebral muscles were more frequent (3—5%). Similar conclusions were arrived at by *Wagenhäuser* in his investigations of morbidity from rheumatic diseases in the Hirzel district near Zürich (3).

As regards therapy, the high percentage of the disabled who underwent only ambulatory treatment confirms the fact that in this country primary health care, especially in industry, is sufficient to treat most patients suffering from degenerative rheumatic disorders. Perhaps only the fact that one the average our examinees became ill fourteen years ago suggested that ambulatory treatment is not fully effective. It seems that in this country the treatment of the cervical and lumbosacral syndromes is either undertaken too late or not applied long enough. Conservative long-term treatment should be given preference as has recently been practiced in the United States and in most European countries (30, 31, 33). The fact that 13.6% of the examinees, before going into retirement, had been treated surgically should be seen in the light of the fact that when conducting our control examinations, precise data on indications for such treatment were not available. However, it would appear that in this country indications for neuro-surgical treatment are rather diverse especially when considering the fact that about one third of the operated patients are not at all satisfied with the operation nor has their work ability improved (34—38). Recent opinions on neuro-surgical treatment of discoradicular conflicts suggest that in these cases surgery is nowadays practiced at a decreasing rate.

In our view disabled workers make inadequate use of orthopaedic aids which, if applied in time, could correct bio-mechanical disorders to a considerable degree.

#### References

1. *Kellgren, J. H., Lawrence, J. S.*: Ann. Rheum. Dis., 17 (1958) 388.
2. *Lawrence, J. S., Bremner, I. M., Bier, F.*: Ann. Rheum. Dis., 25 (1966) 1.
3. *Wagenhäuser, F. J.*: Die Rheumamorbidity, Verlag Hans Huber, Bern-Stuttgart, Wien 1969, p. 103—170.
4. *Lawrence, J. S.*: Rheumatism in Populations, William Heinemann Medical Books LTD, London 1977, p. 32 and 466.
5. *Wood, P. H. N., Badley, E. M.*: Clin. Rheum. Dis., 6 (1980) 3.
6. *Mimica, M., Krapac, L., Madarić, M.*: Acta med. iug., 31 (1977) 3.
7. *Krapac, L.*: Reumatizam, 24 (1977) 33.
8. *Mimica, M., Krapac, L., Malinar, M.*: Lij. vjes., 102 (1980) 539.
9. *Ramazzini, B.*: De morbis artificum diatriba, Traduzione Italiana del dr. Rossi, Edizioni Minerva Medica, Torino 1933, p. 83 and 86.



10. Lawrence, J. S., Aitken-Swan, J.: Br. J. Ind. Med., 9 (1952) 1.
11. Baader, E. W.: Der Rheumatiker in Berufsleben, Handbuch der gesamten Arbeitsmedizin, Urban und Schwarzenberg, Berlin, München, Wien 1952, p. 223.
12. Junghanns, H.: Wirbelsäule und Beruf, Hipokrates Verlag, Stuttgart 1980, p. 9 and 45.
13. Modrić, K.: Arh. hig. rada, 2 (1951) 145.
14. Mandić, V.: Reumatizam, 4 (1957) 139 (special issue).
15. Cop, D.: Reumatizam, 4 (1957) 1 and 63.
16. Deprato, D.: Reumatizam, 4 (1959) 150.
17. Androić, S.: Arh. hig. rada toksikol., 13 (1962) 195.
18. Mardešić, D., Zergollern, J.: Lij. vjes., 83 (1961) 1019.
19. Dürriegl, T.: Lij. vjes., 83 (1961) 1079.
20. Dürriegl, P., Špicer, F.: Ocjena invalidnosti i preostale radne sposobnosti kod oštećenja funkcije kralješnice, Tehnička knjiga, Zagreb, 1978, p. 25 and 63.
21. Dürriegl, P., Jajić, I.: Acta orthop. iug., 5 (1974) 101.
22. Krapac, L., Mimica, M.: Arh. hig. rada toksikol., 27 (1977) 122.
23. Mimica, M., Sarić, M., Malinar, M., Mađarić, M.: Lij. vjes., 99 (1977) 273.
24. Jajić, I.: Klinička reumatologija, Školska knjiga, Zagreb 1981, p. 94, 170, 310, 417.
25. Čapeta, R., Rismondo, M., Kulčar, Ž.: Uvod u prevenciju invalidnosti, Radničko i narodno sveučilište »Moša Pijade«, Zagreb 1982, p. 27-52.
26. Zergollern, J., Krapac, L.: Reumatizam, 30 (1983) in press.
27. Meeting of Disability Commissions of SR Croatia, Plitvička jezera 1982, Report, p. 3 (in Croatian).
28. Mimica, M., Kulčar, Z., Malinar, M., Cerić, B.: Lij. vjes., 102 (1980) 1.
29. Mimica, M., Sarić, M., Malinar, M., Mađarić, M.: Arh. hig. rada toksikol., 28 (1977) 234.
30. Editorial: Lancet, 1 (1981) 977.
31. Burton, C. V.: Postgrad. Med., 75 (1981) 168.
32. Burton, C. V., Kirkadly-Willis, W. H., Yong-Hing, K. et al.: Clin. Orthop., 157 (1981) 191.
33. White, A. A., Panjabi, M. M.: Clinical Biomechanics of the Spine, J. B. Lippincott Company, Philadelphia-Toronto 1978, p. 374.
34. Perin, B., Fućkan-Perin, A.: Reumatizam, 25 (1978) 55.
35. Lipovšek, M.: Zdrav. vestn., 50 (1981) 225.
36. Konjhodžić, F.: Sixth Congress of Yugoslav Association of Neurosurgeons, Book of Abstracts, Zagreb 1982, p. 18 (in Croatian).
37. Lipovšek, M.: Sixth Congress of Yugoslav Association of Neurosurgeons, Book of Abstracts, Zagreb 1982, p. 22 (in Croatian).
38. Jaksche, H., Elminiawi, H., Loew, F.: Sixth Congress of Yugoslav Association of Neurosurgeons, Book of Abstracts, Zagreb 1982, p. 23.

#### Sažetak

#### DEGENERATIVNE BOLESTI CERVIKALNE I LUMBOSAKRALNE KRALJEŠNICE U SKLOPU OPĆE INVALIDNOSTI

U uzorku ispitanika koji su tijekom 1981. god. proglašeni invalidima rada odabrano je 111 muškaraca i 36 žena u kojih su reumatske bolesti bile jedna od prve dvije dijagnoze zbog kojih su komisije bolesnike proglasile invalidima. Prosječna životna dob ispitanika bila je  $52 \pm 6,2$  god. a radni staž  $25,9 \pm 7,2$  god. Od 147 ispitanika 29% su bili NKV, 40% KV, 14% VKV radnici, a 17% invalida u uzorku bili su službenici. Reumatske bolesti bile su glavni uz-



rok invalidnosti u 31,3% invalida. Tijekom pregleda i obrade u Centru za ocjenu radne sposobnosti Instituta za medicinska istraživanja i medicinu rada u Zagrebu, bolnost u vratnom dijelu kralješnice registrirana je u 48,9%, a u slabinskom dijelu u 88,5% ispitanika.

Kompresivni radikularni sindrom vratne kralješnice umjerenog ili težeg stupnja dijagnosticiran je u 23,2 % a sindrom slabinske kralješnice utvrđen je u 67,7% bolesnika. Pozitivan Lazarević-Lasegueov znak zabilježen je u 24,5% ispitanika, i to u 8,2% obostrano.

S obzirom na radnu sposobnost ovih invalida, ocijenjeno je da 58,5% ispitanika uopće nije bilo sposobno za posao, 21,8% bi moglo obavljati neki drugi posao, a 19,7% je zbog reumatskih bolesti prerano umirovljeno.

Raspravlja se o mogućnostima prevencije i terapije mijeloradikularnih kompresivnih sindroma, kao vrlo čestih uzroka privremene i trajne radne nesposobnosti. Čini se da bi dugotrajnom konzervativnom liječenju tih tegoba trebalo dati prednost pred kirurškim tretmanom. Pravilnoj i pravovremenoj upotrebi ortopedskih pomagala trebalo bi posvetiti više pažnje.

*Institut za medicinska istraživanja  
i medicinu rada, Zagreb*

*Primljeno 15. III 1983.*