

PROBLEMS OF WORKERS' MORBIDITY WITH PARTICULAR REGARD TO CHRONIC DEGENERATIVE DISEASES

M. ŠARIĆ

After an introduction dealing with the importance of chronic degenerative diseases as a cause of workers' absenteeism and disability reviewed are studies performed in this field at the Institute for Medical Research. Work on the methodological problems is surveyed (a system of medical documentation and evidence, method of carrying out systematic health examinations in industry), results obtained in studies of general morbidity of Yugoslav workers are summarized and data on completed epidemiological studies of coronary heart disease, arterial hypertension and chronic bronchitis in groups of industrial workers are presented.

Analysing causes of absenteeism due to illness it has been observed that in Yugoslav industry chronic degenerative diseases are growing in importance.

Although, on the whole, the pathology of developed countries has not yet become typical of Yugoslavia, data indicate that among causes of death a dominant place is occupied by cardiovascular diseases, malignant tumors and apoplexy, while tuberculosis and acute infectious diseases once the prevailing cause of death – play today a secondary part. Chronic degenerative diseases represent almost 50 per cent of all cases treated in hospital. They are also a most frequent cause of disability.

Changes in the mortality and morbidity pattern are closely connected with the progress of medical science and public health service as well as with the improved socioeconomic living conditions. Advances in the prevention and therapy of bacterial infections and other diseases, accompanied by better nutrition and improved housing conditions have brought about a prolonged life expectancy. The percentage of elder people in the total population has significantly increased. Yugoslav industry which began to show a significant development only since the liberation, employed mainly young workers. Later on, however, better stabilization of the labour force was established, many workers obtained qualifications and the average age of the industrial worker consequently became higher.

It is known that close connection exists between the ageing of population and the prevalence and incidence of chronic degenerative diseases.

With regard to the above tendencies it was therefore to be expected that in our conditions, too, chronic degenerative diseases will occupy the first place among causes of death and that they will play an important role in the morbidity pattern.

Starting from this assumption the Institute for Medical Research, engaged in the study of various occupational diseases, has also undertaken research into the problem of chronic degenerative diseases in workers morbidity. The aim of these studies, which have now been conducted for a number of years, is in the first place to get better insight into the general and specific morbidity in Yugoslav industry as well as to tackle methodological problems.

1. METHODS OF STUDYING MORBIDITY

One of the first problems that arose in this connection was the question of collecting data about ill workers.

Data about sick absences are regularly recorded in health services. Analysis of these data illustrates the structure and duration of absences due to illness or accidents.

Under the assumption that these data are medically well founded, what unfortunately is not always the case (accuracy of diagnosis), this system of collection and treatment of data still has certain drawbacks and restrictions, thus:

– as a rule the treatment of data is carried out on a large scale (republic, town) and data are presented only according to the groups of diseases, for the industry as a whole. Only exceptionally data are treated according to particular industrial branches. Besides, data are usually analysed with a delay of at least one year.

– data obtained in this way provide information on the number and type of diseases (with sick leaves), but not on the number of ill persons.

Taking these facts into consideration efforts were made to work out a medico-statistical documentation for continuous follow-up and evaluation of workers morbidity. A practical result of these efforts was a suitable medical documentation for industrial health units (1) which was introduced in a great number of health centres in Zagreb (2) as well as in some other towns. Later on a similar system was introduced in a larger area (action of the Federal Institute of Public Health).

This documentation consists of 1. the forms for the registration of medical data and 2. punched cards for the statistical treatment of collected data.

This system can provide a more accurate picture of workers morbidity. On the one hand it serves to record all health disorders regardless of whether they were a cause of absenteeism or not – according to final

diagnosis (i.e. only after verification of diagnosis and not on the occasion of the opening of a sick leave). On the other hand the system makes it possible to follow diseases of each individual, i. e. to record the number of ill persons, the number of sick absences per person in relation to the total number of sick absences, as well as the length of absences. Punched cards which also make a part of the system are designed so as to enable the classification of diseases according to more important diagnoses and not only globally according to the groups of diseases. In this way it is possible to obtain a good insight into the morbidity pattern within groups i.e. into the importance of a particular disease in the morbidity pattern of a certain population.

The hypothesis that chronic degenerative diseases play an increasing role in the workers morbidity has imposed a few specific problems concerning the evaluation of their prevalence and the possibilities of prevention. It is known that one of the main characteristics of degenerative diseases relates to the fact that many of them develop for a longer period of time asymptotically. On the other hand, the nature of chronic degenerative diseases is such that in present conditions of medical science not much can be done therapeutically if the disease has advanced. The most successful way of fighting them is still their early diagnosis if possible already in the often long-lasting asymptomatic stage.

On these grounds originated a type of health examinations called »systematic examination«, which is much applied in industry. Systematic examinations enable to reveal health disorders that have been unknown to the physician or the person examined. Experience has shown that the number of diseases discovered in this way is usually very high amounting to 50 or more per cent of the total number of registered disorders. Thanks to systematic examinations a medical service can obtain a thorough picture of the health condition of a worker. The examination provides information on various factors that may affect the health of the working collective as a whole or of certain working groups.

To give expected results the systematic examination should be on a satisfactory medico-diagnostic level. It should not be expensive or difficult to perform. The methods applied in the carrying out of systematic health examinations play an extremely important role.

The problem of application of systematic health examinations in Yugoslavia with particular regard to the methods used had been dealt with in a number of papers (3-6).

Our experience with medico-statistical documentation in industrial health units and in carrying out systematic examinations was summarized later (7) and the problem of workers morbidity was analysed within a general survey on health conditions in this country (8) and in a specific review of chronic degenerative diseases (9).

All these studies, including the tackling of methodological problems, served only to contribute to the general information about workers' morbidity and to improve general measures in fighting most frequent and important diseases in industry. It has been clear from the beginning that to obtain a more thorough insight into the prevalence, significance and other characteristics of a certain disease or group of diseases additional, specially organized examinations are required. The necessity to evaluate the significance of environmental factors including the working environment, in the occurrence and prevalence of some chronic diseases also required a special approach and methods.

Data about diseases producing temporary working disability indicate that cardiovascular diseases and chronic bronchitis play an important role (10). Particularly interesting is the possible role of some factors of occupational exposure in the occurrence and prevalence of chronic bronchitis. Since these two groups of diseases represent the subject of intense studies in many countries, we have also considered them with particular attention – through – for the time being – on a modest scale.

2. CORONARY HEART DISEASE AND ARTERIAL HYPERTENSION

In the group of cardiovascular diseases coronary heart disease and arterial hypertension have been studied. Examinations have been carried out in selected groups of workers (selected enterprises and occupations), and the results obtained have been partly published (11, 12, 13, 14, 15). Some interesting observations have been made in connection with these diseases in the groups studied, such as the lower prevalence of coronary heart disease and smaller difference between the prevalence for males and females than in other countries. Certain associations between the prevalence of these diseases and some living habits and other parameters have also been confirmed (coronary heart disease – smoking habit, coronary heart disease – obesity, coronary heart disease – arterial hypertension, arterial hypertension – obesity).

In the continuation of this study it is intended to expand examinations to new groups of workers. In the selection of samples attention will be made to differentiate them according to the working and living conditions in order to better evaluate a possible association of some of these factors with the prevalence of the diseases. A study of normal distribution of arterial blood pressure in industrial population is also being carried out.

3. CHRONIC BRONCHITIS

In the study of chronic bronchitis in industry particular attention has been paid to the preparations which also included the evaluation of applicability in our conditions of the epidemiological method recommended by the Committee for the Aetiology of Chronic Bronchitis of the British Medical Research Council. In this connection a questionna-

ire was translated from English and supplemented in sections related to the working anamnesis (16, 17, 18).

Examinations have been performed so far in groups of male workers exposed to cement, lignite and brown coal dust (practically without free SiO_2) during 5 or more years as well as in control groups (19, 20). Examinations in certain groups of general population (males) are being carried out concurrently. A study on the prevalence of chronic bronchitis has been carried out in a group of workers exposed to dust with a high SiO_2 content employed in the manufacture of ceramics and porcelain (21), in a group of workers exposed to barite dust (22) and in a group of workers exposed to bentonite dust (23). All workers exposed to dust of industrial soot in Croatia have been examined (24).

Beside these examinations studies have also been carried out in connection with the exposure to vegetable dusts – hemp, flax, jute, syssal and cotton (20, 25, 26).

In the course of examinations that have so far been completed the prevalence of symptoms of chronic bronchitis has been found to vary – from about 30–35 per cent in miners and workers exposed to industrial soot, 24 per cent in ceramic and bentonite workers, 15 per cent in cement and barite workers and 3–8 per cent in control groups i.e. in groups of adult male population. Among workers employed in cotton mills the prevalence of bronchitis was 32 per cent, in hemp and flax industries even 47 per cent, jute 14 per cent, syssal 12 per cent and in controls from 2–12 per cent.*

Besides differences in the prevalence of chronic bronchitis with regard to occupation, in all examined groups a significant association has been observed between the symptoms of chronic bronchitis and the smoking habit. The symptoms of chronic bronchitis also occurred more often in older age groups.

Examinations which have been under way are aimed at evaluating the significance of occupational exposure – to certain industrial dusts in particular – in the occurrence and prevalence of chronic bronchitis. It is planned to apply the same method in the study of the prevalence of chronic bronchitis in wives of examined miners, cement workers and controls in order to eliminate a possible role of socio-economic and other factors which it is not possible to have under adequate control in such studies. If no difference is found in the prevalence of chronic bronchitis in these groups this would be another proof of the signifi-

* Percentages in the case of cement workers, miners, ceramic workers, workers exposed to barite dust and controls relate to the symptoms defined as follows: phlegm production in the morning and during day (or night) through at least 3 subsequent winter months for more than 2 years.

In the case of exposure to vegetable dusts, industrial soot and bentonite dust – including control groups – symptoms of chronic bronchitis were somewhat differently defined i. e. cough and phlegm production (in the morning or in the course of day or night in winter or summer) through at least 3 subsequent months in a year for more than 2 years.

cance of occupational exposure to dusts (with exposure to irritant chemicals and unfavourable climatic conditions in some occupations) as a contributory factor in the incidence and prevalence of chronic bronchitis.

Simultaneously with the study on the prevalence of chronic bronchitis in relation to occupational exposure some specific relations have been also studied, such as the relationship between somatotypy and chronic lung diseases (27), relationship between radiographic findings of diffuse pulmonary fibrosis and symptoms of chronic bronchitis (28).

References

1. Šarić, M., Milat, D.: Metodika evaluacije morbiditeta radnika, Studija izrađena za potrebe Saveznog zavoda za zaštitu zdravlja, Institut za medicinska istraživanja i medicinu rada, Zagreb, 1960.
2. Margreitner, K., Milat, D.: Zdravstveno-statistička služba na području grada. Birozavod, Zagreb, 1961.
3. Šarić, M.: Prilog metodici sistematskih zdravstvenih pregleda u industrijskom poduzeću, Disertacija, Zagreb, 1959.
4. Šarić, M.: Metoda i način provedbe sistematskog pregleda kao oblika zdravstvenog rada u privrednoj organizaciji, Arh. hig. rada, 10 (1959) 277.
5. Šarić, M.: Systematic Health Examinations in Industry, Ind. Med. Surg., 30 (1961) 113.
6. Šarić, M., Kulčar, Ž.: Sistematski pregledi u općoj praksi, Lij. vjes., 5 (1962) 429.
7. Šarić, M.: Metode proučavanja apsentizma i morbiditeta u zdravstvenoj stanici privredne organizacije, Prev. med., 8 (1965) 339.
8. Šarić, M.: Zdravstvene prilike i stanje zdravstvene zaštite u SR Hrvatskoj, Zdravstvena zaštita, 2 (1964) 5.
9. Šarić, M., Ribić, Z.: Kronične degenerativne bolesti u radničkom morbiditetu, Arh. hig. rada, 19 (1963) 163.
10. Problemi kroničnih bolesti u Jugoslaviji, Savezni zavod za zdravstvenu zaštitu, Beograd, 1965.
11. Uukadinović, Đ., Šarić, M.: Koronarna srčana bolest i hipertenzija kod starijih radnika jednog industrijskog poduzeća, Arh. hig. rada, 17 (1966) 379.
12. Ljuština-Ivančić Nevenka, Uukadinović, D.: Distribucija očnih nalaza kod normotenzivnih i hipertenzivnih radnika jednog industrijskog poduzeća u Zagrebu, Acta Ophthalmol. Jug. 4 (1966) 405.
13. Ljuština-Ivančić Nevenka, Uukadinović, Đ., Ivančić, R.: Distribucija i značaj arteriosklerotičnih promjena na očnom dnu u industrijskoj populaciji, Acta Ophthalmol. Jug. 5 (1967) 34.
14. Uukadinović, Đ., Šarić, M.: The Association of Body Form with the Incidence of ECG Abnormalities before and after Exercise Test in an Industrial Population. Proc. XVth Intern. Congr. Occup. Hlth, Vienna, 1966, Vol. IV, A IV-6, p. 23.
15. Uukadinović, Đ.: Ispitivanje hipertenzije u grupama industrijske populacije, Saдрžaji radova II jug. kongresa za medicinu rada, Split, 1967, 1.
16. Šarić, M., Goldsmith, J.: Methods for Investigating the Relationship of Chronic Bronchitis and Emphysema to Occupational Exposures, Proc. XIVth Inter. Congr. Occup. Hlth, Madrid 1963, Vol. 4 (1963) 75.
17. Šarić, M.: Occupational Exposure as a Factor in Respiratory Impairment, Arh. hig. rada, 14 (1963) 327.

18. Šarić, M.: Ispitivanje prevalencije kroničnog bronhitisa, u: *Suvremene teme iz pneumoftiziologije*, Rep. zavod za zaštitu zdravlja, Zagreb, 1966, str. 85.
19. Šarić, M., Uukadinović, Đ., Žuškin Eugenija: Epidemiological Study of the Prevalence of Chronic Bronchitis in Selected Groups of Industrial Population, Proc. XVth Inter. Congr. Occup. Hlth. Vienna 1966, Vol. V, A VII-13, p. 97.
20. Šarić, M.: Profesionalna ekspozicija i kronični bronhitis, Simpozium o aerozagadenju i hroničnom bronhitisu, Sarajevo, 1967, Zbornik radova, str. 55.
21. Stanković, D., Pleho, E., Šarić, M., Uukadinović, Đ.: Prilog izučavanju oštećenja disajnih organa pri dugotrajnoj ekspoziciji prašini barita, Arh. hig. rada u štampi.
22. Šarić, M., Štritof, M.: Non-Specific Respiratory Effects of Dust with a High Silica Content, Intern. Symposium on Health Conditions in the Ceramic Industry, Stoke-on-Trent 1968, Abstracts, Abstract XIX.
23. Beritić, Dunja, Pauković Ranka, Ualić, F.: Kronični bronhitis u proizvodnji bentonita, II jugoslavenski kongres za medicinu rada, Split 1967, Sadržaji saopćenja, 3-56.
24. Beritić Dunja, Pauković Ranka, Ualić, F.: Respiratory Symptoms and Ventilatory Capacities in Workers Exposed to Carbon Black Dust, XV International Congress on Occupational Health, Vienna 1966, Proceedings, Vol. II-1, A III-148, p. 689.
25. Žuškin Eugenija, Ualić, F.: Kronični bronhitis i promjene ventilacione funkcije pluća radnica izloženih prašini pamuka, Simpozium o aerozagadenju i hroničnom bronhitisu, Sarajevo 1967, Zbornik radova, str. 64.
26. Raguš Boža, Žuškin Eugenija, Šarić, M., Požega Blaženka: Ispitivanje akutnog i kroničnog djelovanja prašine pamuka i vune u jednoj tekstilnoj radionici, Arh. hig. rada, 18 (1967) 165.
27. Uukadinović, Đ.: Odnos između somatotipije i kroničnih bolesti pluća, Simpozium o aerozagadenju i hroničnom bronhitisu, Sarajevo 1967, Zbornik radova, str. 79.
28. Šarić, M., Uukadinović, Đ.: Rendgenološke promjene u plućima u smislu difuzne fibroze u vezi s kroničnim bronhitisom, Tuberkuloza, 19 (1967) 44.