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Kierownik: doc. dr med. Bolesław Semczuk

Stanisław KLONOWSKI, Bolesław SEMCZUK,
Jerzy PĘSZYŃSKI, Hanna ZDERKIEWICZ

Epidemiological Studies on Larynx Cancer

Badania epidemiologiczne raka krtani

Эпидемиологические исследования рака гортани

The increase of larynx cancer incidence is associated with aging of the population, with the increase of the percentage of male population and with the increase of general incidence of malignant tumours (1, 5, 6, 8, 20, 22).

The risk of larynx cancer incidence varies therefore significantly in relation to age and sex. The greatest incidence is observed in the age group from 50 to 74 years. Men are affected by cancer of the larynx 10—15 times more than women (3, 6, 7, 9, 10, 11). Cameron (1956) reported that in the USA about 6 thousand new cases among men are diagnosed every year. Although specific environmental factors are involved in the etiology of larynx cancer, only local carcinogenic effect of smoking was proved on statistically significant material (20, 21). It is assumed that the mortality index and percentage of the occurrence of all human tumours are estimated by the degree of tumour risk in the particular organs, more or less independent of external factors (5). Statistical data concerning the total incidence of malignant tumours in Poland in the years 1956—1961 (10) worked out on the basis of registered tumours show some error margin and it is generally assumed that actual cancer incidence is higher than it appears from the records. This is proved by the index of cancer incidence in this country calculated per 100 000 inhabitants which was 103.3—98.9—119.9 (10) in the years 1959—1961, respectively. Much greater differences in not completely registered incidence of cancer in the above period show general indices for Gdańsk, Zielona Góra and Opole districts and particularly for the districts of Lublin and Białystok. The general index of cancer incidence for the population of the Lublin district was 89.6—29.8—56.4 (10) in the years 1959—1961, respectively. Besides, the comparison of indices of cancer incidence — 29.8, of advanced cases — 133.1 and of mortality — 61.3 in the Lublin district for 1960 gives evidence of fairly incomplete registration of cancer detection (10). Difficulties in obtaining actual data, which statists in all countries come across, caused that an average incidence of cancer was estimated by means of some empirical formulae (Cutler's formula for cancer

incidence probability). Data, however, which are closest the actual ones as regards sex and age, location and incidence of cancer in a given district can be determined only by detailed examinations.

The estimation of actual indices of larynx cancer incidence of the Lublin district population in the years 1960—1965 in relation to sex and age and the regions inhabited was the purpose of our investigations which were carried out in the area of 24,829 km² populated by 925 200 men and 975 300 women (17).

METHOD

The authors reviewed the documents of all treated patients with larynx cancer in 1960—1965 in the Lublin Laryngological Clinic, in regional laryngological dispensaries, in the District Oncological Dispensary and Oncological Hospital of Lublin. Results of microscopical investigations of all excisions from the larynx, sent in the above period to the histo-pathological laboratory of the Lublin district, were checked. Moreover, the documents of laryngological dispensaries of those regions were checked which are in the neighbouring districts in which hospitalization of the Lublin population was expected. No patients from the neighbouring districts were taken into consideration in the studies.

RESULTS

In the investigation period 195 cases with initial larynx cancer were found in the population of the Lublin district. In this group there were 181 men (93%) and 14 women (7%). The age of those patients ranged from 30 to 84 years. The average age was 55.

Table 1 shows the number and percentage of patients in the particular age and occupation groups.

Tabl. 1. Number and percentage of cancer cases in the particular age and professional groups

SUCCESSIVE 5 - YEAR AGE GROUPS											NUMBER AND PERCENTAGE IN A GROUP	PROFESSIONAL GROUPS			
30 - 34	35 - 39	40 - 44	45 - 49	50 - 54	55 - 59	60 - 64	65 - 69	70 - 74	75 - 79	80 - 84		WHITE - COLLAR WORKERS	PHYSICAL WORKERS	FARMERS AND FARM WORKERS	CRAFTSMEN
3	6	12	17	28	40	42	25	13	6	3	195	19	45	118	13
1,5	3,0	6,0	8,7	14,4	20,7	21,7	12,8	6,7	3,0	1,5	100%	9,7	23,0	67,1	6,2

In 184 patients (94%) the diagnosis was confirmed by histological examinations. In 5 (2.7%) out of 11 remaining patients (6%) with clinically reliable diagnosis the probability of a malignant tumour was

found by microscopic examination, whereas in the 6 patients left (3.3%), who did not agree to be examined, further clinical course confirmed oncological character of their disease.

The incidence of larynx cancer of Lublin population in relation to sex and the region inhabited (Lublin town, district towns and settlements, villages — the annual average for the years 1960—1965) is shown in Table 2.

Table. 2. Incidence of larynx cancer of Lublin population in relation to sex and the inhabited area — annual averages for 1960—1965. In brackets Danish indices — annual averages for 1953—1957

AREA	POPULATION OF THE REGION / DANISH POPULATION /		
	MALES	FEMALES	TOGETHER /M+F/
LUBLIN TOWN / KOPENHAGEN /	7,17 /5,87/	0,80 /0,94/	3,81 /3,23/
PROVINCIAL TOWNS AND SETTLEMENTS / DANISH PROVINCIAL TOWNS /	2,68 /3,02/	0,22 /0,26/	1,40 /1,59/
VILLAGES / DANISH VILLAGES /	2,90 /1,34/	0,16 /0,23/	1,51 /0,81/
T O G E T H E R	3,35 /2,79/	0,24 /0,16/	1,76 /1,60/

The incidence of larynx cancer of the district population in successive 5-year age groups (annual average for the years 1960—1965)

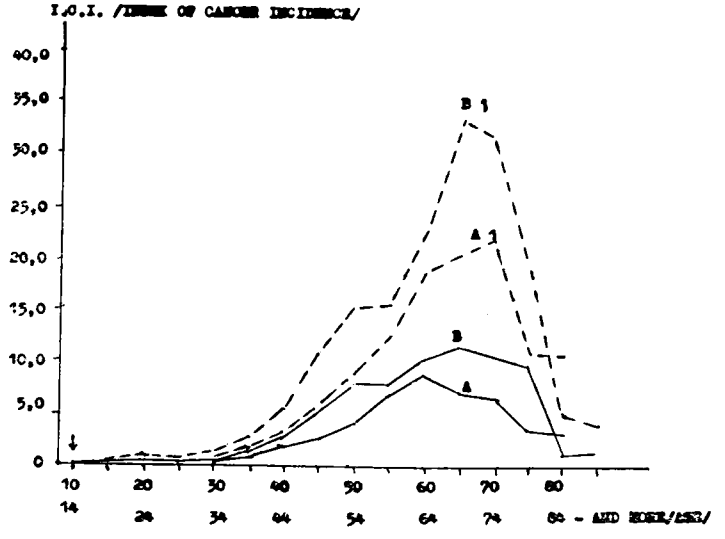

Fig. 1. Incidence curves in successive 5-year age groups — annual averages of the investigation period. Lublin curve: A — of total population, A_1 — of male population. Poland's curve (registered): B — of total population, B_1 — of male population

in comparison with analogous indices of the whole country (annual average for the years 1960—1961) is shown in Fig. 1.

DISCUSSION

The registration of all laryngological wards and anatomopathological laboratories in the district, on the basis of which cases of initial cancer were recorded with sufficient likelihood, reflects the actual incidence of the district population. The character of complaints caused by larynx cancer induces the patients to seek medical advice and to be hospitalized for some time.

In the papers of several authors the given incidence percentage of larynx cancer in relation to the total incidence of malignant tumours differs sometimes considerably. Nundy (13) gives the following percentage for mixed population of the Malays and Chinese in five states of Malasia: 1.1 — 1.8 — 2.7 — 0.6 — 0.5. According to the same author (14) this percentage for Birma was even 8% in the period 1956—1957. Habibi (4) gives 3.3% for the population of Iran, Prudente and Mirra (16) — 3.6% for the Japanese population in Brazil, Clemensen (2) — 0.6% for the Danish population. Martin (12) informs that larynx cancer is on the average 2% of all cancer cases. Wynder (20) observed an average increase of larynx cancer incidence of 75% in 10 American towns from 1937 to 1947. According to British data (3) larynx cancer occurs much more frequently in men living in towns.

Actual incidence indices of larynx cancer in the particular districts of Poland, which could be worked out on the basis of examinations carried out in their areas, are not known yet. Latkowski and Okoń (11) gave coefficients of cancer incidence of larynx cancer for the particular district on the basis of cancer registration in the years 1956—1961 (10). They prove the spreading of this disease in the given area; although only incidence indices for a given population inform about the occurrence of new disease cases (10). Koszarowski and co-workers (10) give the percentage of initial incidence of larynx cancer in relation to the total incidence of malignant tumours in Poland in 1959—1961: 1.6—2.0—2.2 and successive incidence indices (calculated per 100 000 inhabitants yearly) 1.9—2.0—2.7, respectively. Analogous data of those authors for the years 1952—1958 confirm the fact of systematic increase of cancer incidence in Poland. A steady growth of the number of cases with larynx cancer was observed on our material in the successive years 1950—1957 (7, 19).

Farmers and farm workers were the largest professional group in the authors' material as regards the percentage: 61.1% (118 persons), whereas

the actual percentage of rural population in the region of Lublin was 66.8%. The greatest number of cancer cases in successive 5-year age groups was found from 60—64 years of age (21.7%). The annual incidence index of larynx cancer calculated for the whole population of the district showed steadily increasing tendency in the successive years 1960—1965: 1.26—1.30—1.61—1.81—2.27—2.15, respectively. The analogous annual mean of this period was 1.76.

The comparison of the results of these studies (average annual incidence indices — Table 2), with Danish indices for the years 1953—1957 of sociologically quite uniform population resulted in the following: Lublin — 3.81, Copenhagen — 3.23; provincial towns: Lublin — 1.40, Danish — 0.81; the incidence index for the whole Lublin district was 1.76 and for Denmark — 1.60. Differences in the incidence of the given sex: men of Lublin population — 3.35, Danes — 2.79, women of Lublin population — 0.24, Danish women — 0.16. Considerable differences (incidence index) in risk of larynx cancer among the population of particular regions of the Lublin district, particularly in men were found; Lublin town — 3.81 (males — 7.17), provincial towns —1.40 (males — 2.68), villages — 1.51 (males — 2.90). Similar characteristic is shown by Danish reports.

Lublin indices refer to younger population than the Danish population that decreases the incidence per 100 000 people, but they refer to a period of 7 years later. Taking into consideration the above qualifications as well as the phenomenon of aging, a comparison of both populations can be assumed and the dynamics of laryngx cancer incidence in both population groups can be regarded as very close each other.

The curve (a) of actual incidence of larynx cancer of Lublin population (annual mean incidence indices for successive 5-year age groups in 1960—1965) is rising evenly and steadily starting from the 35th year of life and reaches the highest intensity in the age group from 60 to 64 years; in the following age groups evenly and steadily falling tendency is visible (fig. 1). The incidence index of male population (curve a[1]) reaches the highest value in the age group from 65—74 years. An analogically calculated curve of registered larynx cancer incidence for Poland's whole population on the basis of registration cards (10.18 — average for 1960—1961) shows higher incidence indices than those of the Lublin district. This was effected by a higher incidence among the population of big towns and industrial centres that is confirmed by Danish indices (2) and the authors' studies (Table 2). Assuming that the age and sex composition of Lublin population is closer to that of Poland's population and that people aged 50—65 are affected most frequently

(6, 7, 11, 15, 22), the comparison of both curves — actual Lublin curve (a) and the nationwide registered (b) — shows in the latter a considerable decrease of incidence in successive age groups from 50 to 64 years. It is caused by considerably insufficient registration of initial cancer cases among Poland's whole population in this age group. The almost minimal increase of incidence indices on the country's curve (b) in the age group from 50 to 59 years can be interpreted in that way only, whereas an intensive increase of the incidence index is observed on this curve in the age group from 30 to 50 years and further from 60—69 years, as well as along the whole actual Lublin curve (a and a^1) from 30 to 64 years of age. Also a rapid fall of the incidence index on the country's curve (b) in the age group from 70 to 84 years and more (for the whole population and males) below the Lublin indices shows that also in this group there occurred considerably insufficient registration of patients. Thus it can be assumed that domestic indices of actual larynx cancer incidence in 1960—1961 were much higher than the registered data, particularly in the age groups 50—59 and from 75—84 and more.

Conclusions

1. The index of annual incidence of larynx cancer of the Lublin population showed a tendency of steady increase in successive years of the period 1960—1965. A gradual increase of incidence was also observed in the years 1950—1959 (7).

2. The average annual incidence index of the Lublin population was 1.76 in the years 1960—1965.

3. Considerable differences were found in risk of larynx cancer among the population of various areas and sex in the region dealt with.

4. The incidence dynamics of larynx cancer in the population of various areas and both sexes in the region dealt with is very close to the corresponding Danish indices.

5. The authors' studies showed an even and intensive growth of larynx cancer incidence of the Lublin population in successive 5-year age groups (up to the age of 64 for the whole population and 69—74 years for males). This period is followed then by a steady incidence decrease.

6. Poland's incidence indices of larynx cancer (average for 1960—1961) calculated on the basis of registered tumours show, in comparison with the Lublin indices, insufficient registration in successive 5-year age groups, particularly in the group from 50 to 59 and from 75 to 84 years of age and more of the whole population.

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STRESZCZENIE

Przeprowadzono badania zachorowalności na raka krtani populacji lubelskiej w latach 1960—1965. Opracowano wskaźniki zachorowalności za poszczególne lata dla ludności różnych obszarów i obu płci oraz w kolejnych 5-letnich grupach wieku. Wyniki badań własnych porównywano z analogicznymi wskaźnikami duńskimi oraz ze wskaźnikami krajowymi opracowanymi na podstawie kart zgłoszeń nowotworów złośliwych.

РЕЗЮМЕ

Установлена действительная заболеваемость раком гортани населения Люблинского воеводства в 1960—1965 гг. Разработаны показатели действительной заболеваемости в отдельные годы этого периода для населения обоих полов разных районов воеводства. Исследуемое население по возрасту делилось на группы. Возрастной интервал между каждой из этих групп составлял 5 лет. Результаты наших исследований сопоставлялись с аналогичными показателями датских ученых, а также с показателями, представленными Институтом онкологии в Варшаве, которые были разработаны на основании регистрационных карт злокачественных опухолей.

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