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Epidemiological Study of 314 Cases of Cancer of the Bladder in the Administrative Department of Bas-Rhin, France*

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Summary. This study is composed of two epidemiological investigations. The first concerns the geographical distribution of cancer of the bladder in the department of Bas-Rhin. The geographical distribution of 314 cases of cancer of the bladder in the eight districts of the Bas-Rhin has been studied. The resultant map shows considerable variations in morbidity. The urban predominance may be due to environmental factors. The second enquiry concerns the frequency of multiple cancers of different primary sites occurring in cases of cancer of the bladder. Nine such cases have been identified. There may be a common predisposing factor in such cases. All patients were heavy smokers.

Key words: Cancer, Bladder, Geographical Distribution, Epidemiology.

INTRODUCTION

The geographical situation and university structure of the Department of Bas-Rhin are favourable to epidemiological investigations. An epidemiological study of cancer of the bladder was possible through the collaboration of the histological departments of Strasbourg and Colmar. Very few cases would escape documentation and 314 cases have been studied. All tumours of the urinary epithelium have been included, including Stage 0 tumours. All numbers have been corrected to incidence per 100,000 living residents according to the results of the 1968 census. (The results of the 1975 census were not available at the time of study.)

This study concerns the geographical distribution of cancer of the bladder in the Department of Bas-Rhin which includes rural and industrial areas. The average annual morbidity over a five-year period is identical to that of other authors - 7.5 new cases per 100,000 residents (Table 1). The sex distribution was 78.6% in males and 21.3% in females. The age related morbidity indicates that the maximum risk occurs between 70 and 79 years of age when corrected for the living residents in each decade and not 10 years earlier as a function of age might suggest (Fig. 1). If exposure to a carcinogen at work explains the high incidence of cancer of the bladder in men and that 10-15 years of exposure is required, since men retire between 50 and 65 years of age, the risk of cancer of bladder after 80 years of age must be similar in both men and women.

GEOGRAPHICAL DISTRIBUTION

The administrative department of Bas-Rhin is divided into eight districts for which the populations are known. These districts vary in the degree of urbanisation and the socio-economic level. Figure 2 shows geographically the frequency variations of epithelial tumours of the bladder for the different districts as the number of new cases per 100,000 residents occurring in one year. There are obvious variations. Three groups may be defined.

Group I (Districts with a High Morbidity)

This group consists of the districts of Strasbourg City and Strasbourg Country. These are the only districts where the morbidity is higher than the average morbidity for the whole Department. The

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Table 1.

Arrondissement	Number of cases aged 65-69	New cases per annum	Population 1968	Annual Morbidity 100,000 pop.
Strasbourg (city)	106	21,2	249.396	8,5 cases
Strasbourg (country)	64	12,8	128.345	10 cases
Erstein	32	6,4	86.973	7,3 cases
Haguenau	28	5,6	94.425	5,9 cases
Molsheim	19	3,8	66.060	5,9 cases
Saverne	25	5	81.781	6,1 cases
Selestat	24	4,8	64.960	7,3 cases
Wissembourg	16	3,2	55.427	5,9 cases
Total	314	62,8	827.367	7,5 cases

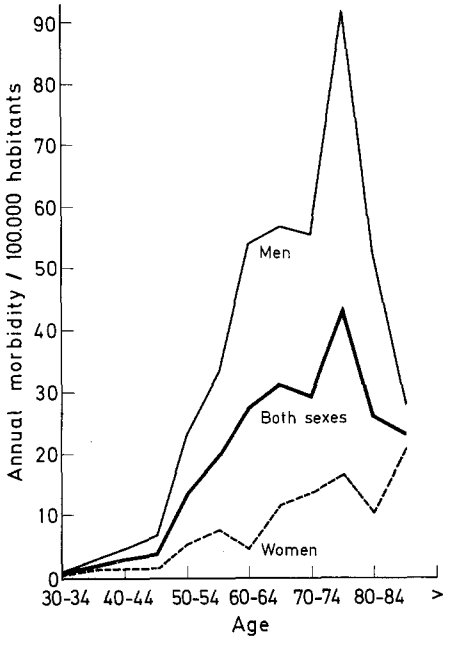

Fig. 1. Evolution of morbidity as a function of age and sex

district of Strasbourg Country with 10 new cases per 100,000 residents gives an average of 33% more cases than the whole Department. The district of Strasbourg City is second with 8.5 new cases per 100,000 residents. The proportion of additional cases is 13% above the average for the whole Department.

Group II (Districts with Average Morbidity)

This group is composed of two districts - Erstein and Selestat. The average morbidity is 7.3 cases per 100,000 residents which is 3% less than the average for the entire Department. This difference is not significant.

Group III (Districts with a Low Morbidity)

This group consists of four districts. Three of these - Haguenau, Molsheim and Wissembourg - have a morbidity of 5.9 new cases per 100,000 residents which is 21% less than the average. Saverne has a morbidity of 6.1 new cases per 100,000 residents which is 19% less.

From a statistical point of view the difference for groups 1 and 3 are very significant. These differences are particularly significant when comparing an area like Wissembourg (5.9) and Strasbourg Country (10). The area of Strasbourg Country has produced 41% more cases compared with Wissembourg during the period under study.

The higher morbidity rates occurred in urban districts, whereas there is a much lower tumour incidence in rural areas (1,2,3,4,6,11). The factors which could explain this increased morbidity in urban areas have never been identified. An interesting epidemiological study by Hagstrom et al (8) examined all the deaths due to cancer in Nashville between 1949 and 1960. These were classified taking into account a pollution factor and socio-economic status. They showed that a

very significant positive correlation existed between atmospheric pollution and mortality due to cancer of the bladder. Nevertheless, it must be remembered that an urban population can differ from a rural population in other ways. These variable factors are not easy to define and include eating habits, cigarette smoking and employment. An attempt was made in this study to correlate cigarette consumption with the occurrence of bladder cancer but unfortunately sufficient details were not available.

INCIDENCE OF MULTIPLE TUMOURS IN PATIENTS WITH CARCINOMA OF THE BLADDER

The simultaneous or sequential discovery of more than one primary tumour in the same person is quite rare. The frequency lies between 0.2 and 8%. The frequency is much higher in autopsy studies. Pojer (9) has commented on the apparent increase in multiple cancer. He attributed this to three factors. Firstly better treatment with longer survival so that a second neoplasm has time to develop. Secondly, better supervision of patients treated for an initial tumour and finally, more sophisticated methods for cancer detection. The fundamental question raised by Fauvet (7) concerns the problem of whether or not a person with a primary cancer is more or less likely to develop a second cancer than another person of the same age and sex and living under similar conditions. We have studied 180 cases of patients suffering from bladder tumours in order to ascertain the frequency of multiple tumours. The second tumours could occur prior to, simultaneously or following the diagnosis of bladder carcinoma. The malignancy of each of the lesions has been confirmed and the question of metastasis eliminated.

Among the 180 cases examined there were 9 patients who fulfilled these criteria. Multiple tumours therefore occurred with a frequency of 5%. This must be a minimal frequency since at the time of investigation these patients had not been followed for a sufficient length of time. Among these 9 cases the second tumours were found to occur before the onset of bladder carcinoma, at the same time as the bladder tumour and following closely upon the diagnosis of bladder carcinoma. There were two cases of carcinoma of the lung and three cases of carcinoma of the pharynx and mouth.

There is not a great deal of information about the types of cancer associated with bladder tumours except for the observations of Dargent (5). He examined 280 cases of patients treated for carcinoma of the hypo-pharynx and found a significant number of patients with a second tumour in the bladder. Tumours in all these sites are more frequently encountered among heavy smokers and in our series four of the five patients with associated pharangeal and broncho-pulmonary tumours were heavy smokers.

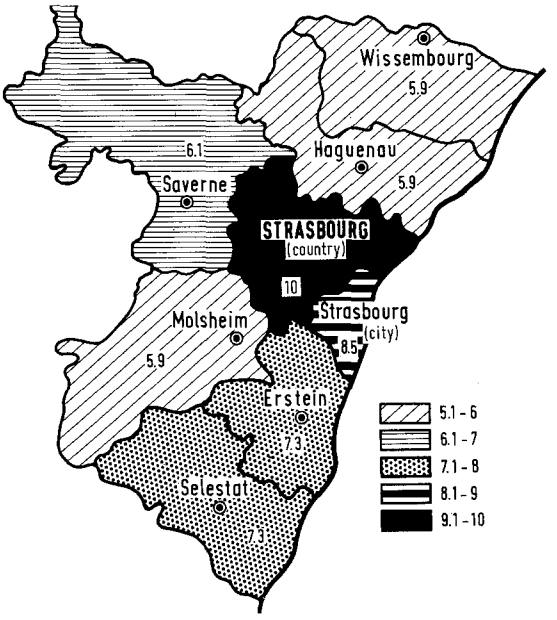

Fig. 2. Morbidity of cancer of the bladder in each district of the department of Bas-Rhin (France). (Numbers brought back to 100000 residents).

REFERENCES

1. Clemmensen, J., Nielsen, A., Lockwood, K.: Mortality rates for cancer of urinary bladder in various countries. British Journal of Cancer 11, 1 (1957)
2. Clemmensen, J., Lockwood, K., Nielsen, A.: Smoking habits of patients with papilloma of urinary bladder. Danish Medical Bulletin 5, 123 (1958)
3. Clemmensen, J.: Endemiology of cancer in Denmark. In: Cancer. Raven, R.W. (ed.). London: Butterworth 1958
4. Clemmensen, J.: Mortality and morbidity from bladder tumours in various countries. Acta Universitatis Internationalis Cancer 18, 667 (1962)
5. Dargent, M., Colon, J., Nahas, V.: Documents anatomocliniques concernant l'association cancer de l'hypopharynx et cancers des voies urinaires excrétrices. Bulletin de l'Association Francaise pour l'Etude du Cancer 49, 169 (1962)

6. Dorn, H. F.: Morbidity and mortality from bladder tumours in North and South America. Acta Universitatis Internationalis Cancer 18, 553 (1962)
7. Fauvet, J., Chavy, A., Piet, R.: Les cancers primitifs multiples. Revue du Praticien 14, 2149 (1964)
8. Hagstrom, R. M., Sprague, H. A., Landau, E.: The Nashville Air Pollution Study, VII. Mortality from cancer in relation to air pollution. Archives of Environmental Health 15, 237 (1967)
9. Pojer, N.: Contribution à l'étude des cancers multiples primitifs: à propos de 151 cas. Thèse Médicale Strasbourg 31, 69 (1969)
10. Poyot, G.: Contribution à l'étude épidemiologique et à la recherche étiologique du cancer de la vessie. Thèse Médicale Strasbourg 131, (1970)
11. Tsuji, I.: Environmental and industrial cancer of the bladder. Acta Universitatis Internationalis Cancer 18, 662 (1962)

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