

Tumors of the Male Genital System

Edited by

E. Grundmann and W. Vahlensieck



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With 123 Figures



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Sponsored by the Swiss League against Cancer

Dedicated to the Memory of

JACQUES BOREAU (1913—1975)

Docteur en Médecine, Interne des Hôpitaux de Paris
Aide d'Anatomie à la Faculté de Paris
Chef de Clinique à la Faculté de Paris
Lauréat de l'Académie de Médecine en 1975

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Introduction

E. GRUNDMANN, and W. VAHLENSIECK

In recent years tumors of the male genital system have acquired a new scientific importance in many respects: First, epidemiologic studies have revealed a striking increase of prostate carcinoma in northwestern Europe and in the USA; it is now counted among the most frequent malignant tumors in males. Geographic and ethnic distributions suggest that this tumor, too, may be triggered by exogenous factors of a still unknown nature. Histologic classification of malignant tumors of the prostate and testes has attained a certain finality, and the clinical relevance of the stages is recognized. Diagnosis by histology is now supplemented by aspiration biopsy cytology which offers a ready and reliable diagnostic potential. Its safety even surpasses that of punch biopsy histology and supports the qualification of cytology as a screening method.

In the Federal Republic of Germany prostate carcinoma was recently included in the cancer prophylaxis program of the social insurance system: Every man over 45 is entitled to one prophylactic free examination per year. Although the number of patients profiting from this opportunity is still rather small, the number of patients is steadily growing who, as a result of this prophylactic examination, received medical treatment at an early stage of the disease and with a relatively better prognosis¹. Topical problems of social medicine are discussed in this context, as well as plans and developments of the social health service and of the supporting organizations, the federal societies for cancer campaign.

The importance of prophylaxis is enhanced by newly developed therapies, especially for prostate carcinoma and testes carcinoma. New and differentiated methods of surgery and radiology are described, and also some new aspects in chemotherapy. In general, the therapy of prostate and testis tumors has come to occupy a whole division in cancer research where success will entirely depend on the co-operation of the various disciplines. Growing interest is focused on new developments in endocrinology which may open new possibilities of medication.

Carcinoma of the penis occupies a separate position where new epidemiologic investigations have demonstrated its causes in exogenous factors, including circumcision, faulty hygiene, various infections, etc. Here, too, good progress is reported in surgical, radiologic, and chemotherapeutic methods.

¹ In 1975, one-third of all new cases of prostate cancer were detected in prophylactic examinations.

A review of the present status of epidemiology, diagnostics, and therapy in tumors of the male genital system has to include the tumors of the seminal vesicles and epididymis, of which more recent and comprehensive presentations are not frequent. We see a tragic event in the decease of Jacques BOREAU, one of the very few eminent experts in this field who died a few weeks after his participation in our symposium. He has presented an impressive review of his vast experience in radiology, in his paper on diagnostics and therapy of carcinomas of the seminal vesicles. His latest important and comprehensive monograph Images of the Seminal Tracts, Radiological and Clinical Comparisons had been published in 1974. During the discussion of the symposium, his contributions revealed him to be a scientist of unusual competence and personal integrity. This volume is dedicated to his memory among his colleagues.

I. Prostate Carcinoma

Epidemiology of Prostate Carcinoma

H. TULINIUS

Thorough and comprehensive reviews exist on the epidemiology of carcinoma of the prostate (7, 16, 19, 31). In reviewing descriptive epidemiology of the disease, this chapter will give mortality and incidence rates for carcinoma of the prostate in Iceland. It will also mention some suggestions as to etiology.

DESCRIPTIVE EPIDEMIOLOGY

Descriptive epidemiology tries to characterize a disease in terms of its frequency of occurrence in incidence and mortality information for various groups. These may be geographically and racially defined, or in terms of other groupings such as by occupation, marital status, etc. For many diseases, including many malignant neoplasms, the age distribution is characteristic (8, 9). So it is for carcinoma of the prostate.

The mortality information, that is, how many die of a disease, is universally available, but the incidence information is often more detailed and more accurate. These data are not strictly comparable because incidence counts how often a condition - in this case malignant tumors of the prostate - is diagnosed, whereas mortality counts those who die from the condition. For some cancers, such as skin cancer, there is a great difference between the two, because relatively few people die from skin cancer. In the case of carcinoma of the prostate, this is not a problem except perhaps for the so-called latent carcinomas of the prostate (see below).

There is a great geographical variation in the frequency of the carcinoma of the prostate. It is a frequent carcinoma in northwestern Europe and in North America and extremely uncommon in the populations of the Near East and in some African, Central and South American populations. It is less frequent in eastern Europe than in western Europe. The rarity of carcinoma of the prostate in the Japanese was noted and published by STEINER (25) as early as 1954. In the last decade it has become increasingly well known that the black population of the United States has a higher frequency of the disease, both in mortality and in incidence, than the white population (18).

MORTALITY

Table 1 shows, in order of rank, the mortality rate for carcinoma of the prostate for 1971 standardized to the so-called world population (26).

Table 1. Rank order of mortality from carcinoma of the prostate, standardized to "world" population 1971^a

Barbados	22.1	Luxemburg	11.6
Sweden	18.4	U.K., England & Wales	11.2
Switzerland	18.3	U.K., Scotland	10.9
Norway	18.3	Italy	10.4
Uruguay	16.2	Czechoslovakia	9.7
Iceland	14.9	Venezuela	8.9
New Zealand	14.7	Costa Rica	8.5
Cuba	14.7	Poland	8.5
Hungary	14.5	Israel, Jews	7.9
Australia	14.4	Romania	7.9
Canada	14.2	Malta	7.8
Netherlands	14.2	Panama	7.2
Portugal	14.2	Yugoslavia	6.7
Finland	14.0	Bulgaria	6.4
France	13.9	Greece	6.0
Germany, Federal Republic	13.9	Paraguay	5.9
Denmark	13.5	Mexico	5.6
Austria	13.1	Dominican Republic	5.1
Ireland	13.1	Mauritius	4.3
Spain	12.3	Hong Kong	2.2
U.K., Ireland	12.0	Japan	1.9
Puerto Rico	12.0	Egypt	1.4
		El Salvador	1.3

^a Obtained from the World Health Organization, Geneva.

This information was obtained from the Division of Vital Health Statistics of the World Health Organization in Geneva and has been compiled from causes of death reports from the respective governments. The rates are given per 100,000. The range is between 22 and less than 2. There are a number of populations, mainly European and North American, that have rates between 20 and 10, which is fairly high for a cancer. At the lower end is El Salvador in Central America, Egypt in the Near East and Japan and Hong Kong with their Japanese and Chinese populations. Then come four populations from Central America. In the next group we find southeastern European countries, Greece, Bulgaria, Yugoslavia, Malta, Rumania, and Israel. The highest figure is from Barbados but Barbados has a relatively small population - 240,000 - interestingly enough 90% Negroes. As seen in Table 2 and Figure 1 in the preceding year, 1970, the standardized rate for Barbados was only 10.9; in 1969 it was 15.4, and in 1968 it was 17.1. These rates are not stable, presumably due to a small population. The next country however, Sweden, has a rate of 18.4 and as seen in Figure 1 these rates have been constantly 16 and above since 1958. An upward trend is seen in the figures from all these countries. The same figure shows the mortality rate from Japan, with an upward trend, from 1 to 2 over the 16-year period 1956-1971.

In those countries with a relatively high rate of prostate carcinoma this malignancy occupies one of the three top places among causes of death of malignant diseases, usually competing with lung carcinoma and stomach carcinoma.

Table 3 and Figure 2 show the age-specific and standardized mortality and incidence rates for Iceland. The mortality is obtained from the annual reports of the Director General of Health in Iceland.

Table 2. Mortality from carcinoma of the prostate for individual years from 1956 to 1971 standardized to "world" population for selected countries^a

Standardized mortality rates for individual years																
	1956	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71
Barbados											17.5	20.0	17.1	15.4	10.9	22.1
Sweden	13.5	14.4	16.0	16.2	16.6	16.7	17.5	18.6	18.1	16.5	16.3	16.8	16.9	18.0	17.1	18.4
West Germany	11.7	11.6	11.2	11.7	11.4	11.5	11.9	12.0	12.2	12.5	12.9	12.9	13.0	13.5	13.6	13.9
Czechoslovakia	8.3	8.2	8.5	8.4	7.5	7.9	9.1	8.8	9.1	9.0	8.9	8.8	9.6	9.3	9.5	9.7
Poland				2.9	3.7	3.7	4.5	6.3	7.2	7.4	7.5	8.1	8.2	8.0	8.3	8.5
Japan	1.0	1.2	1.4	1.4	1.4	1.4	1.6	1.6	1.9	1.7	1.8	1.8	1.9	2.1	1.9	1.9

^a Obtained from the World Health Organization, Geneva.

Table 3. Carcinoma of the prostate in Iceland. Mortality for the ten year period 1965-1974 and incidence for the two ten year period 1955-1964 and 1965-1974, and for the twenty year period 1955-1974

	Age Specific Rates												Crude	World
	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-					
Mortality 1965-74	1,9	4,3	9,9	31,1	58,2	125,3	181,9	386,4	334,5	13,78			11,69	
Incidence 1955-64	2,3	5,0	17,0	39,4	96,6	182,8	278,3	552,0	445,1	17,5			16,96	
Incidence 1965-74	3,8	13,0	24,7	76,3	160,9	323,9	382,0	676,3	907,9	31,5			27,96	
Incidence 1955-74	2,1	9,3	21,1	59,2	131,2	262,0	341,4	616,6	703,9	25,9			23,0	

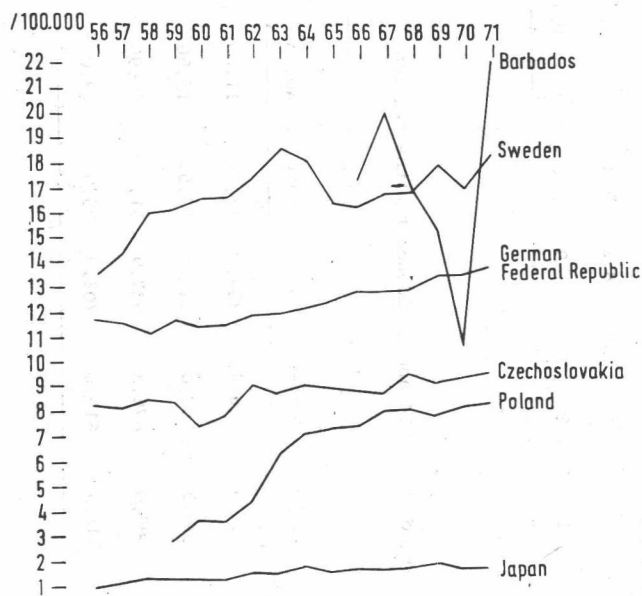


Fig. 1. Time trends of mortality from carcinoma of the prostate for the countries listed in Table 2

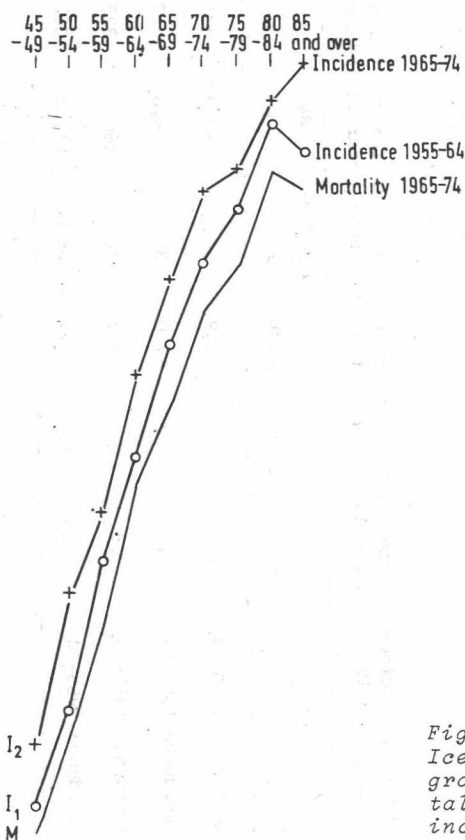


Fig. 2. Carcinoma of the prostate in Iceland. Graph shows for 5-year age groups, logarithm of age-specific mortality for 1965-1974 and of age-specific incidence for 1955-1964 and 1965-1974

INCIDENCE

Apart from the data from Iceland shown in Table 3, which is from the Icelandic Cancer Registry (3-5), the incidence information is taken for the most part from Cancer Incidence in Five Continents Vol. II, which was published in 1970 (27) (see Table 4).

Here the American Negro, that is, the Negro in the Alameda County Registry in California, USA, has the highest incidence rate 65.3. Many populations have incidence rates ranging from 15 to 45/100,000. But the lowest incidence rate is for the "non-Jews" in Israel, 3.1, and in Japan, 3.2 for Miyagi prefecture and 4.3 for Okayama prefecture. In the first volume of Cancer Incidence in Five Continents the lowest figure was for the Chinese in Singapore, 0.9 (26).

There are sharp differences, both between geographical areas and between races. Migrant studies have shown that when people move from low incidence areas to high incidence areas, their risk increases. This has been shown for Polish (23) and Japanese (13) migrants to the USA. Mortality rates are, however, increasing rapidly in those countries. Table 2 and Figure 1 show a twofold increase in Japan and about a threefold increase in Poland.

All reported Chinese and Japanese populations have very low rates. The USA Negroe has the highest known rate, but the situation with Central American and African Negroes is not yet clear.

Urban areas have higher incidence rates than rural areas as seen in Norway for 1964-1966 where the respective rates are 34.1 compared with 27.3/100,000 (see Table 4).

AGE DISTRIBUTION

Table 3 and Figure 2 show the age distribution of carcinoma of the prostate for Iceland. The peculiarity of the age distribution curve for carcinoma of the prostate, as pointed out by DOLL (8), is how late in life the rise starts and how steep the curve is. In other words, prostate cancer is relatively rare in adults and any significant frequency starts around age 60. It then rises very steeply up to the highest age groups.

Figure 3 compares the age distribution of carcinoma of the prostate in Iceland in 1957-1966 to that of stomach and colon cancer for males, and breast cancer for females (5).

TIME TRENDS

As seen in Table 2 and Figure 1 mortality rates, at least in some populations, show a tendency to increase over time. The same can be said for incidence rates in Iceland (see Table 3 and Figure 2). This increase in standardized rates means that regardless of the age structure of the population in question, the rates for individual age groups are rising. Figure 4 shows the increase in age-specific rates for the 20-year period 1955-1974 in Iceland.