PROSTATIC CANCER AND SOCIAL CLASS

BY

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In a previous paper (Richardson, 1964) it was shown that both mortality and hospital morbidity rates from benign prostatic disease were higher in the upper social classes. Using the same sources of data and methods of analysis, the present report demonstrates a fairly similar epidemiological picture for carcinoma of the prostate.

MORTALITY

Over the last 30 years the death rate from prostatic cancer in Scotland has remained at about 17 per 100,000 in the age group 55-64 years, but at age 65-74 years the rate has increased from 64 in 1930-32 to 106 per 100,000 in 1963, and in men aged 85 and over the rate has gone up from 86 to 476 per 100,000 in the same period (Registrar General for Scotland, 1963). This steep rise in mortality in the very old may reflect a real increase in the prevalence of prostatic cancer, but is probably due largely to improved diagnosis and perhaps also to a small extent to greater survival following the introduction of hormone therapy.

From tabulations specially provided by the Registrar General for Scotland (1963), age-specific death rates from prostatic cancer were calculated by social class (Table I).

TABLE I

AVERAGE ANNUAL DEATH RATE FROM PROSTATIC CANCER PER 100,000 POPULATION, BY AGE AND SOCIAL CLASS
SCOTLAND, 1951-55

Social Class	Age (yrs)		
	50-64	65-74	75 and Over
I and II ..	12	95	278
III	11	98	274
IV and V ..	10	79	227

The figures show a slightly higher death rate in the upper social classes but the differences are less

pronounced than was the case with deaths from benign prostatic disease. This tendency towards greater mortality from malignancy of the prostate in the higher socio-economic groups is in line with the results of several studies summarized by King, Diamond, and Lilienfeld (1963).

HOSPITAL ADMISSIONS

Since cancer of the prostate is to some extent a treatable disease, deaths may not give a reliable index of prevalence. Morbidity was therefore explored by examining the hospital and nursing-home records of patients diagnosed as cases of prostatic cancer in north-east Scotland during 1961 and 1962. The sources of these data were (a) hospital records departments, (b) the Scottish Hospital In-patient Inquiry, and (c) the consultant surgeons in the area; details about collection were provided in the paper on prostatic hyperplasia (Richardson, 1964).

The hospital admission rates are shown in Table II. Here also, despite some unevenness, the older age groups show higher rates in the upper social classes. Thus it appears that older men from the better-off groups in this north-east region are more likely to be admitted to hospital or nursing home with prostatic cancer than are men in the lower social classes.

TABLE II

HOSPITAL ADMISSION RATES FOR CARCINOMA OF PROSTATE PER 100,000 PER ANNUM, BY AGE AND SOCIAL CLASS
N-E SCOTLAND, 1961-62

Social Class	Age (yrs)			
	50-59	60-69	70-79	80 and Over
I and II ..	33	153	263	631
III	10	68	181	322
IV and V ..	35	108	200	232

Sub-division of these admission rates by area of residence (based on address in hospital records) revealed the trend shown in Table III.

TABLE III

HOSPITAL ADMISSION RATES FOR CARCINOMA OF PROSTATE PER 100,000 PER ANNUM, BY AGE, SOCIAL CLASS, AND RESIDENCE
N-E SCOTLAND, 1961-62

Social Class	Age (yrs)			
	50-69		70 and Over	
	Aberdeen City	County* Area	Aberdeen City	County* Area
I and II ..	84	82	590	243
III	56	16	282	171
IV and V ..	94	47	221	197

* County Area comprises Aberdeenshire, Kincardine, Banff, and Moray.

The higher admission rate of men from Aberdeen City compared with men from the rural area is quite marked and is in keeping with results from studies in the United States of America and in Scandinavia reviewed by King and others (1964).

In Tables II and III the admission rates of Social Class III are nearer to those of Classes IV and V than to those of Classes I and II. This may be due to a tendency to record on hospital notes the last occupation of the patient rather than his main occupation; thus, elderly men who had in their later years of employment moved from skilled to less skilled jobs would appear in the IV and V numerator thereby lowering the Class III admission rates and pushing up the IV and V rates. This explanation assumes that such errors are less common in the recording of occupation or census schedules. These points clearly require study.

Case fatality rates in hospital were 19 per cent. in Social Classes I and II, 19 per cent. in Class III, and 21 per cent. in Classes IV and V. Mean age at time of hospital admission was 71.7 years in Classes I and II, 72.4 years in Class III, and 70.4 years in Classes IV and V. It would therefore seem that neither age at first admission (re-admissions have not been counted) nor relative risk of death in hospital provide an explanation for the social-class differentials observed. It must, however, be noted that, because proportionately more upper class men with cancer of the prostate enter hospital and because they suffer the same case fatality as men in other social classes, mortality rates based on hospital deaths related to population also show a social-class gradient; the hospital death rates of men over age 70 per 100,000 population per annum were 95 in Classes I and II, 59 in Class III, and 49 in Classes IV and V.

DISCUSSION

Despite its increasing importance as a cause of death, cancer of the prostate is a comparatively neglected disease epidemiologically. One reason for this may be the uncertainty that attends its diagnosis; though both the signs and symptoms of cancer of the prostate are somewhat different from prostatic hyperplasia, the two conditions can be confused. Thus, in a study of 133 cases in which the pre-operative diagnosis did not agree with the pathologist's report, Barnes and Okamoto (1961) found that 77 (58 per cent.) were diagnosed as benign before surgery, but malignant tissue was found in the specimen removed; conversely 56 (42 per cent.) were diagnosed as carcinoma (including those designated as probable or possible carcinoma) by clinical examination, but no malignant tissue was found by the pathologist.

There can be little doubt that some of the cases in this study were in fact benign, just as an unknown proportion of the patients included in the paper on hyperplasia may have been malignant. If these diagnostic errors operated largely in the same direction—for example, benign cases being labelled malignant—it could be argued that the social class bias shown by the cancer data in this paper is an artefact due to contamination from the social class gradient in benign prostatic disease. In view, however, of the finding of Barnes and Okamoto (1961) referred to above, it seems unlikely that this "one-way" error could be an adequate explanation of the social-class gradient.

A second difficulty arises over certification of cause of death. Most deaths from prostatic cancer occur in very old men where multiple pathology can often make choice of the underlying cause of death extremely problematical. It may therefore be suggested that, because upper class men are more often admitted to hospital with prostatic disease, the more precise diagnosis possible in hospital eventually leads to more frequent certification of prostatic cancer as the main cause of death in these social classes. This possibility could be investigated by comparing the frequency of mention of prostatic cancer on death certificates as underlying or contributory causes in the different social classes; this approach might also throw light on the urban/rural differences in admission rates.

The fact remains, however, that, whatever the true prevalence of prostatic disease may be in the various socio-economic groups in the community, men in the upper social classes are more likely to be admitted to hospital or nursing-home for prostatic investigation. Further epidemiological research into both benign and malignant prostate disease is clearly required;

in particular it is important to know whether the higher mortality and hospital admission rates in the upper social classes are due to real excesses of prostate disease in these groups or to social-class variations in attitudes and behaviour. Thus the next step might well be a community study of the prevalence of prostatic symptoms, attitudes to such symptoms, utilization of medical care, and of the relationship between these variables and social class.

SUMMARY

Both mortality from cancer of the prostate and morbidity, as measured by hospital admission rates, are higher in the upper social classes. The possible contribution of diagnostic errors and of variations in death certification are discussed. To explore the

true social-class prevalence of both benign and malignant disease of the prostate in older men, a community study of symptoms and of social reactions to them is now required.

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