CANCER OF THE PROSTATE: A NUTRITIONAL DISEASE?

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The title of this review, "Cancer of the Prostate: A Nutritional Disease?," reflects the increasing evidence that nutrition may play a significant role in the prevention and/or progression of prostate cancer. The question underscores the limited data available and the need for more intensive study of the role of diet and prostate cancer. We herein review currently available clinical data and supplement these data with experimental observations on the effects of dietary manipulation. The available data, although scanty, provide some fascinating observations that with further study may dramatically influence our approach to the issues of tumor prevention, progression, and perhaps, therapeutic interventions as they relate to prostate cancer.

Much publicity has been given to the relation of diet to breast and colon cancer, but little attention has been devoted to diet and prostate cancer. Yet, there are data indicating that diet may be a more significant factor in the behavior of prostate cancer than in either breast or colon cancer, and these data are reviewed herein.

Cancer of the prostate is the most common non-cutaneous malignancy in U.S. men. The lifetime risk of developing clinically significant prostate cancer for a white man is 13%, or roughly 1 chance in 8, and that for a black man is 1 in 11. The higher overall incidence rate among white men reflects a recent change and may be a result of selection bias largely due to the increased effectiveness of prostate-specific antigen (PSA)-driven screening programs among white men. The overall risk of dying of prostate cancer for a white man is 3.50% and that for a black man is 4.46%, which is thought to reflect the more aggressive nature of the tumor in black men.1,2

Despite the enormity of these statistics for clinical disease, there is an unresolved paradox as to why the incidence of latent or microfocal carcinoma of the prostate is even higher, with an incidence that is relatively constant and unrelated to race or geography. Figure 1A shows a whole-mount section of a human prostate gland. The outlying area magnified in Figure 1B describes a small region of adenocarcinoma of the prostate. The tumor is called latent, or microfocal, because it is so small and localized that it is found only with a microscope. Microfocal cancer exists in at least 30% of men over 50 as contrasted with a much lower clinical incidence of prostate cancer in most series.3 In a recent and somewhat disconcerting autopsy study by Sakr et al.,4 30% of men between the ages of 30 and 39 who died primarily of trauma had clinically undetected microscopic cancer of the prostate. Most fascinating is the observation that this rate of microfocal cancer is roughly the same throughout the world and is unrelated to race and increases with age. Autopsy studies in men in the eighth decade of life indicate that the incidence of microfocal cancer of the prostate exceeds 75%.5 The marked discrepancy between the microscopic and clinical rate of prostate cancer implies that there is some factor or factors that inhibit the growth of prostate cancer in the majority of men or, conversely, stimulate its growth in some men with pre-existing microfocal disease.

Further evidence that many men with latent prostate cancer will not progress to clinically detected disease or death is shown in Tables I and II. Table I depicts the clinical incidence per 100,000 men in selected countries6 and Table II the death rate from prostate cancer by country.7 From the data in Tables I and II, one can infer that (1) the incidence of prostate cancer in U.S. men is similar to that found in Western Europe but differs markedly from that found in men living in Asian countries; and (2) many men who develop clinical prostatic cancer will not die of it. For instance, in the United States about 25% of those with a clinical diagnosis of prostate cancer will actually die from it. Swiss men have the highest overall death rate from prostate cancer, and about 40% of those having the disease die of it. Even in Japan, with an overall low clinical