

## Letter to the Editor

# Rising Incidence of Prostate Cancer in Shanghai, China

### Letter

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Despite a similar prevalence of latent prostate tumors around the world, incidence rates for clinical prostate cancer in Western men are 30–50 times higher than those for Asian men (1). The reasons for this disparity are unclear (2).

In the United States, prostate cancer accounts for 32% of all incident cancer cases in men (3), whereas in Shanghai, prostate cancer accounts for less than 1% of all cancers in men (4). Although the reported incidence of this cancer in China is one of the lowest in the world, recent data suggest that prostate cancer rates are increasing (4).<sup>2</sup> Using population-based cancer registry data, gathered in Shanghai from 1972 to 1994, we evaluated further the age-specific incidence trends to provide clues for etiological studies.

Details on the SCR<sup>3</sup> have been described elsewhere (4). Briefly, the SCR collects information on all newly diagnosed cancer cases among Shanghai residents. The total population of the 10 districts within the urban area for which data are available for the entire time period was 7.3 million in 1992. The cases were coded according to the 4-digit rubrics of the ninth revision of the International Classification of Diseases (5), and all cases that were classified as prostate cancer (first three digits = 185) were selected for analysis. Population estimates were based on periodic censuses, with age- and sex-specific annual estimates derived by linear interpolation and extrapolation for the remaining years. Rates per 100,000 person-years for the three 6-year periods (1972–1977 to 1984–1989) and the 5-year period, 1990–1994, were calculated for 5-year age groups (starting at age 55 years) and, overall, age-adjusted to the world population using the direct method (2). Annual percentage changes in incidence were estimated by means of a linear regression of the logarithm of the respective rates on calendar year, weighted by the number of cases.

A total of 1663 cases were reported to the SCR during the 23-year period (1972–1994). The age-adjusted incidence increased 70% from 1.63 in 1972–1977 to 2.78 in 1990–1994, with an estimated annual increase of 3.2% (Table 1). Increases were most pronounced in the last 5 years. For men between the

ages of 60 and 84 years, incidence increased more than 50% in each 5-year age group, with the largest proportional increases found in the oldest age categories (ages 75–79 years, 140%; ages 80–84 years, 94%). For those younger than 60 years and older than 84 years, numbers were small ( $n < 30$ ), and rates and trends were unstable.

During the same 23-year interval, incidence also increased substantially in the United States (132% in whites and 141% in African-Americans) (3), due mainly to increasing use of transurethral resection of the prostate and of prostate-specific antigen testing (7). However, these changes are unlikely to account for the large increase in incidence in Shanghai, because prostate cancer is a rare tumor and routine urological screening is uncommon. In fact, due to the lack of screening, most prostate cancer cases in Shanghai are diagnosed at a later stage, with a relatively poor survival rate (Table 2). In recent years, the 5-year relative survival rate for all ages and stages combined in Shanghai was only 38%, versus 89% in United States (6), and the median survival time was 1.5 years, versus 9 years in the United States.

Changes in the patterns of known or suspected prostate cancer risk factors, including diet, physical activity, body size, and other environmental factors, may explain partially the rapid increase in incidence. In Shanghai, per capita consumption of pork, eggs, and milk products increased more than 100% over the past 3 decades (4). Dietary fat, especially saturated and animal fat, has been linked to prostate cancer risk in several epidemiological investigations, including a case-control study among Chinese in North America (7). Improvements in cancer diagnosis among older people and more complete cancer reporting over the study period may also be involved, although the recent acceleration suggests that the observed increases may be real.

In the absence of screening, changes in incidence in Shanghai suggest a change in the prevalence of exposures. Whether the rise in incidence can be attributed to changes in diet and physical activity and subsequent changes in body weight, circulating levels of androgens, and/or androgen metabolism deserves further investigation. Because of the rarity of prostate cancer, few prostate cancer studies have been conducted in China. Nevertheless, with the concomitant changes in exposures and incidence, this population provides a unique opportunity for future studies to elucidate risk factors or protective agents that may play a role in the progression of latent tumors to clinical cancer and to provide clues for cancer prevention.

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<sup>3</sup> The abbreviation used is: SCR, Shanghai Cancer Registry.

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Table 1 Age-adjusted incidence rates<sup>a</sup> of prostate cancer in urban Shanghai,<sup>b</sup> 1972-1977 to 1990-1994

Age (years)	Period				% change	Annual % change
	1972-1977	1978-1983	1984-1989	1990-1994		
55-59	3.42 (30) <sup>c</sup>	1.46 (15)	2.06 (26)	3.02 (31)	-11.5	-0.51
60-64	4.94 (32)	4.03 (32)	5.63 (57)	7.78 (73)	57.39	3.28
65-69	9.21 (43)	13.20 (78)	10.66 (80)	16.96 (124)	84.02	2.89
70-74	17.46 (49)	21.87 (83)	20.18 (101)	32.65 (165)	86.98	3.52
75-79	23.67 (31)	31.37 (63)	34.68 (98)	56.84 (168)	140.10	5.29 <sup>d</sup>
80-84	30.38 (14)	40.55 (31)	40.60 (50)	59.06 (80)	94.41	3.72
85+	42.14 (5)	32.71 (7)	29.38 (12)	50.27 (27)	19.27	2.20
All ages <sup>e</sup>	1.63 (219)	1.81 (324)	1.79 (440)	2.78 (680)	70.26	3.22

<sup>a</sup> Per 100,000 person-years, age-adjusted using the world standard.

<sup>b</sup> The population in urban Shanghai was 7.3 million in 1992.

<sup>c</sup> Nos. of cases are in parentheses.

<sup>d</sup>  $P < 0.05$ .

<sup>e</sup> On the basis of all age groups, although data for ages of <55 years were sparse and, thus, are not shown.

Table 2 Relative survival rates for 382 prostate cancer cases diagnosed during 1988-1991, in Shanghai, China

Age (years)	Survival at		
	1 year	3 years	5 years
50-59	63.8	44.5	37.9
60-69	73.0	47.0	38.9
70-79	63.4	42.1	43.4
80+	39.9	21.7	16.1
All ages	62.3	41.3	38.2

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