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Black/White Differences in Non-treatment of Bladder Cancer Patients and Implications for Survival

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Abstract: Analysis of 20,764 White and 882 Black bladder cancer patients diagnosed during 1978–85 indicates that Black patients were more likely than White patients to go untreated following diagnosis after adjustment for age- and stage-at-diagnosis, sex, and tumor histology (OR = 1.80, 95% CI = 1.33, 2.43). Treatment status was found to be a significant predictor of five-year survival after adjustment (treated/untreated odds ratio = 3.16, 95% CI = 2.08, 4.79). Results suggest that differences in initial therapy may contribute to the survival differential between Black and White bladder cancer patients. (*Am J Public Health* 1989;79:772–774.)

Introduction

Decreased survival in Black patients relative to White patients with bladder cancer has been documented in several reports.[1–8] A number of factors have been found to contribute to this survival difference: age, diagnosis at more advanced stages, and more aggressive tumor histology. Within stage- and histology-specific groups, Blacks continued to have poorer five-year relative survival rates.[5,8] Findings by Axtell and Myers[7] suggest that different treatment patterns could also explain some of the racial differences in survival.

Questions remain regarding differences in treatment with respect to such determinants as age, stage at diagnosis, and histologic type, and their role in poorer survival among Black relative to White bladder cancer patients. We attempted to answer these questions through the study of a marker for treatment differences—non-treatment—and its association with survival in 20,764 White and 882 Black bladder cancer patients diagnosed between 1978 and 1985.

Methods

This study is based upon data collected by nine population-based tumor registries participating in the National

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Cancer Institute's SEER program (Atlanta, Connecticut, Detroit, Hawaii, Iowa, New Mexico, San Francisco-Oakland, Seattle-Puget Sound, Utah).[9] The variables in this study are determined in the SEER registries by review of hospital, clinic, private laboratory, private radiotherapy, private surgery, private practitioner (where the hospital record indicated therapy was to be received from the private practitioner), and nursing/convalescent home records. Case finding audits are conducted to ensure complete coverage of the SEER areas, and periodic training sessions and workshops are held to maintain quality control.

For this analysis, only patients with "Black" or "White" race noted in the medical record, and with newly diagnosed bladder cancer (ICD-0 188.0-188.9) as a single or first primary tumor were selected.[10] Excluded were 457 cases: patients diagnosed through death certificate or autopsy report alone (n = 49), patients with tumors not microscopically confirmed (n = 333), patients with unknown first course of therapy (n = 56), and patients with missing data for stage-at-diagnosis (n = 19). Using these criteria, 20,764 White and 882 Black bladder cancer patients were studied for racial differences in first course of therapy. Excluded cases had a somewhat higher proportion of patients who were older, Black, and female than did selected cases.* There were no other differences.

First course of therapy includes all cancer-directed therapy within four months of the initiation of therapy, which may occur at any time following diagnosis. A categorical, non-treated/treated variable was derived from the data. Black and White patients were then compared on this treatment status variable.

*Data available on request to author.

Survival time was defined as the period from the month of diagnosis as noted in the medical record to the earlier data of most current follow-up or December 1985, the most recent date for which virtually complete follow-up data were available.

Logistic regression analysis was used to explore the role of race in non-treatment of bladder cancer, adjusting for the potential confounding variables of age- and stage-at-diagnosis, sex, and tumor histology. This analysis was conducted for all study patients combined and separately by registry using the LOGIST procedure available through the SAS Institute.[12]

Because the proportional hazards assumption of a constant hazard ratio over time was not met by the data, logistic regression analysis was used to study the relation of treatment status with five-year survival with bladder cancer, simultaneously adjusting for race, age- and stage-at-diagnosis, sex, and tumor histology. This analysis was restricted to the 7,321 cases diagnosed between January 1978 and December 1980, and thus available for five years of follow-up. Of these patients, 4,254 were known to have survived for at least five years following diagnosis, and 3,067 were known to have died within five years of diagnosis. Cases diagnosed in this period alive at a most recent follow-up date less than five years after diagnosis were excluded from our analysis (n = 175). There was no difference between selected and excluded cases in the proportion of treated and untreated patients.

Results

Black and White, treated and untreated, bladder cancer patients are compared by age- and stage-at-diagnosis, sex, and tumor histology in Table 1. In the logistic regression (Table 2), Blacks were more likely than Whites to go untreated even with adjustment for age- and stage-at-diagnosis, sex, and tumor histology (O.R. = 1.80, 95% CI = 1.33, 2.43). A higher probability of non-treatment was also asso-

TABLE 1—Race and Treatment Status by Age, Stage,* and Histology

Patient Characteristics	Black Cases		White Cases		Untreated Cases		Treated Cases	
	Number	(%)	Number	(%)	Number	(%)	Number	(%)
Total	882	(100.0)	20,764	(100.0)	609	(100.0)	21,037	(100.0)
Age-at-diagnosis								
<45	51	(5.8)	982	(4.7)	24	(3.9)	1,009	(4.8)
45–54	104	(11.8)	1,936	(9.3)	28	(4.6)	2,012	(9.6)
55–64	228	(25.9)	4,927	(23.7)	112	(18.4)	5,043	(24.0)
65–74	286	(32.4)	6,466	(31.1)	151	(24.8)	6,601	(31.4)
75–84	166	(18.8)	4,719	(22.7)	178	(29.2)	4,707	(22.4)
85+	47	(5.3)	1,734	(8.4)	116	(19.1)	1,665	(7.9)
Sex								
Female	317	(35.9)	5,500	(26.5)	209	(34.3)	5,608	(26.7)
Male	565	(64.1)	15,264	(73.5)	400	(65.7)	15,429	(73.3)
Stage-at-diagnosis*								
0–I	492	(55.8)	15,153	(73.0)	261	(42.9)	15,384	(73.1)
II	31	(3.5)	545	(2.6)	1	(0.2)	575	(2.7)
III	137	(15.5)	2,361	(11.4)	35	(5.8)	2,463	(11.7)
IV	167	(18.9)	1,803	(8.7)	160	(26.3)	1,810	(8.6)
Unknown	55	(6.2)	902	(4.3)	152	(25.0)	805	(3.8)
Histology								
Papillary	15	(1.7)	645	(3.1)	15	(2.5)	645	(3.1)
Squamous	67	(7.6)	381	(1.8)	48	(7.9)	400	(1.9)
Transitional	358	(40.6)	6,910	(33.3)	272	(44.7)	6,996	(33.3)
Papillary-transitional	366	(41.5)	12,114	(58.3)	181	(29.7)	12,299	(58.5)
Other	76	(8.6)	714	(3.4)	93	(15.3)	697	(3.3)
Treatment status								
Treated	824	(93.4)	20,213	(97.4)	—		—	
Untreated	58	(6.6)	551	(2.7)	—		—	

*Data on the extent of disease at diagnosis were summarized to correspond with stages I-IV as described in the American Joint Committee's Manual for the Staging of Cancer.[11] These data include all information available within two months of diagnosis, excluding metastases known to have developed subsequent to diagnosis. *In situ* patients are included as stage I cases because their five-year survival rate is between the rates for stages I and II.

TABLE 2—Predictors of Non-treatment for Bladder Cancer: Analysis by Logistic Regression

Predictor Variable	Odds Ratio for Non-Treatment	95% CI
Race		
White	1.00	—
Black	1.80	1.33, 2.43
Sex		
Male	1.00	—
Female	1.18	0.99, 1.42
Stage		
0-I	1.00	—
II	0.08	0.01, 0.57
III	0.50	0.35, 0.73
IV	2.93	2.35, 3.66
Unknown	7.15	5.70, 8.97
Age-at-diagnosis*	1.03	1.02, 1.03
Histology		
Other	1.00	—
Papillary	0.33	0.19, 0.59
Squamous	0.97	0.66, 1.44
Transitional	0.46	0.35, 0.60
Papillary-transitional	0.22	0.16, 0.29

*per year of age.

TABLE 3—Predictors of Five-Year Survival with Bladder Cancer: Analysis by Logistic Regression

Predictor	Odds Ratio	95% CI
Untreated	1.00	—
Treated	3.16	2.08, 4.79
Race		
White	1.00	—
Black	0.54	0.40, 0.73
Sex		
Male	1.00	—
Female	1.33	1.17, 1.52
Stage		
0-I	1.00	—
II	0.42	0.30, 0.58
III	0.29	0.24, 0.34
IV	0.08	0.06, 0.11
Unknown	0.76	0.60, 0.96
Age-at-diagnosis*	0.92	0.91, 0.92
Histology		
Other	1.00	—
Papillary	3.03	1.98, 4.62
Squamous	0.70	0.42, 1.17
Transitional	1.71	1.26, 2.33
Papillary-transitional	3.07	2.26, 4.18

*per year of age.

ciated with advancing age, unknown stage and advanced stage at diagnosis. Patients with papillary, transitional cell, and papillary-transitional cell histology were less likely to be untreated as compared to patients with tumors histologically identified as squamous cell or "other" (including: "adenocarcinoma NOS," "malignant NOS" and "cancer NOS").

This logistic regression model was also used to analyze our data by registry. The non-treatment odds ratio for Blacks versus Whites was 1.74 (95% CI = 0.79, 3.82) in Atlanta, 3.10 (95% CI = 1.50, 6.41) in Connecticut, 1.38 (95% CI = 0.84, 2.26) in Metropolitan Detroit, 2.66 (95% CI = 0.29, 24.51) in New Mexico, and 1.60 (95% CI = 0.72, 3.56) in San Francisco-Oakland. The results were not interpretable for four other SEER registries due to small numbers and/or limited variable dispersion among the cases.

In a logistic regression analysis of survival, the odds ratio for five-year survival with bladder cancer for treated versus untreated patients was 3.16 (95% CI = 2.08, 4.79), with simultaneous adjustment for race, age- and stage-at-diagnosis, sex and tumor histology (Table 3). Analysis by registry yielded similar results in the eight registries for which there were sufficient data. Use of a proportional hazards model also yielded similar results.

The effect of treatment/non-treatment status on racial differences in survival was small (data not shown) as would be predicted given that non-treatment was selected as only a marker for treatment differences, with a relatively small proportion of patients in the non-treatment category.

Discussion

The results of this study indicate that there are differences in treatment status between Black and White bladder cancer patients, using as an indicator the proportion untreated. Black patients were more than twice as likely as White patients to go untreated. This difference was only partially explained by racial differences in age- and stage-at-diagnosis, sex, or tumor histology.

Non-treatment was also associated with poorer five-year survival among bladder cancer patients, even after adjustment for race, age- and stage-at-diagnosis, sex, and tumor histology. Race was also found to be associated with five-year survival with bladder cancer, even after adjustment for non-treatment. Given that treatment/non-treatment status was selected for use only as a marker for treatment differences, with a relatively small number of patients going untreated, we would not have predicted that adjustment for this variable would have a substantial impact on Black/White differences in survival.

These findings suggest that differences in treatment status contribute to the survival differential between Black and White bladder cancer patients.

Potential sources of bias in our findings include the possibility of race-selective underreporting of patient treatment. Because surgery and radiation therapy have been the mainstays of treatment for bladder cancer,[13] it is unlikely that initial therapy would occur outside settings where SEER reporting is virtually complete—hospitals, or private surgical or radiotherapy facilities. In addition, a conservative bias may have been introduced in the non-treatment odds ratio for women versus men by the exclusion of proportionately more women from the patient population selected for the study.

This study was limited by the type of data routinely collected by the tumor registries participating in the SEER program. SEER data on stage at diagnosis and tumor histology may not adequately adjust for these variables, particularly since we were unable to rule out bias in physician diagnostic practices as recorded in the medical record. SEER registries report data on populations in which rural Blacks are underrepresented. Thus, these results should be generalized to rural populations with caution. Treatment of cases was reported to SEER only in the broadest of categories (e.g., "surgery only"). As a result we were unable to assess the quality of care for patients who received some form of initial therapy. Individual patient characteristics which might be expected to influence treatment such as concomitant illness, education, income, and source of medical care could not be included in our analysis as they are not routinely reported to SEER.

A more complete assessment is needed of Black/White differences in patterns and quality of bladder cancer treat-

ment, their biologic, socioeconomic, and behavioral determinants, and their impact on survival. The National Cancer Institute is currently conducting a multicenter investigation of Black/White cancer survival differences that will further our understanding of these issues.

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Factors Associated with Participation in a Community Senior Health Promotion Program: A Pilot Study

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Abstract: Factors associated with participation in a community senior health promotion program were studied in 103 participants and a population-based control group of 531 non-participants. Compared to controls, participants had similar physical health status, but lower mental and social health status. Both men and women participants reported more depressive symptoms, lower positive affect, and lower social participation. Mental and social health may be important yet under-studied factors influencing participation in community health promotion programs. (*Am J Public Health* 1989; 79:775–777.)

Introduction

The results of large health promotion/disease prevention (HPDP) research projects[1–8] suggest HPDP programs attract relatively healthy persons in higher socioeconomic groups. But little is known about factors influencing participation in the community-based programs unaffiliated with a major research project—the setting in which the majority of health promotion/disease prevention programs presumably must occur. Also, few HPDP programs have studied recruitment of elderly subjects. For these reasons, we studied factors associated with participation in a community-based, senior health promotion program sponsored by a large health maintenance organization (HMO).

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Methods

The study was conducted at Group Health Cooperative of Puget Sound (GHC), a large, closed panel, not-for-profit HMO in western Washington State. The health promotion/disease prevention (HPDP) program (Growing Healthier) was intended for a broad target population of older adults and was advertised through the GHC magazine mailed to all enrollees, brochures distributed at GHC clinics, and presentations to consumer groups. The program was described as an opportunity to "enjoy life more" and "take greater control of your health and future." The curriculum consisted of a 10-week series of lectures, group discussions, and skills demonstrations led by trained instructors and senior volunteers. Specific topics covered included exercise, nutrition, stress management, social support, and self-responsibility/self-assertiveness.

Study participants were 103 (98 per cent) of the first 105 older adults (age 55+) to enroll in the Growing Healthier program given in the fall of 1984 at three of the 21 HMO clinics. Controls were 531 respondents (age 55+) to a survey of a stratified random sample of HMO enrollees (response rate = 90 per cent) and did not attend the program. For the analysis, control data were weighted to approximate a simple random sample.

The sources and/or definition of the independent variables used in this study are shown in Appendix I. Odds ratios assessed the association between program participation and subject characteristics. For consistency, variables with more than two levels were collapsed down to two categories. Adjustment for potential confounders was done using logistic regression.

Results

Table 1 describes the demographic characteristics of the study sample. Almost all study subjects were White. Compared to controls, participants were older, better educated, and reported higher incomes.