Bladder Cancer in the Elderly: Racial/Ethnic Distribution of Resource Utilization

THE UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER

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Supported in part by a grant from Pharmacia (formerly Searle)

ABSTRACT

BACKGROUND: With a potential for frequent recurrence, Bladder Cancer (BC) is among the costliest of cancers due to intensive resource utilization. We sought to answer the question, "Does resource use in bladder cancer patients vary by race/ethnicity?"

METHODS: We used the SEER linked Medicare database to track resource utilization for BC patients aged 65 and older, stratified by race/ethnicity. We compared demographic, overall health, stage of disease and monthly use of inpatient and outpatient resources through Analysis of Variance (ANOVA) or chi square analysis.

RESULTS: Non-white populations made up less than 10% of the study population. We observed no statistically significant difference in age at diagnosis (P=0.234) or comorbidity (P=0.337), but did observe a statistically significant difference in stage of disease at diagnosis (P=<0.001), inpatient days and outpatient and physician visits.

	White NH	African American NH	Hispanic	Other	p value
N (%)	4496 (92.5)	162 (3.3)	40 (0.8)	165 (3.4)	
Mean Months in Study	34.9 (34.4, 35.4)	30.6 (27.6, 33.5)	33.4 (28.9, 38.0)	36.1 (33.6, 38.6)	0.006
Mean Resource Use / Month					
IP Days	0.99 (0.83, 0.94)	1.47 (1.08, 1.86)	0.71 (0.42, 1.00)	0.92 (0.66, 1.20)	0.002
SNF Days	2.13 (1.90, 2.36)	3.49 (2.38, 4.58)	1.13 (0.36, 1.91)	2.20 (1.08, 3.31)	0.127
Hospice Days	3.29 (2.59, 4.00)	2.49 (1.41, 3.58)	3.15 (-1.97, 8.28)	1.34 (0.15, 2.53)	0.064
OP visits	0.53 (0.52, 0.55)	0.63 (0.53, 0.73)	0.56 (0.38, 0.73)	0.41 (0.34, 0.48)	0.011
MD Visits	6.76 (6.56, 6.96)	8.02 (7.53, 10.50)	5.94 (3.81, 8.07)	7.17 (6.21, 8.14)	0.001
HH visits	0.26 (0.24, 0.27)	0.33 (0.26, 0.40)	0.36 (0.19, 0.53)	0.28 (0.020, 0.37)	0.124

CONCLUSIONS: Despite little difference in age at diagnosis or co-existing medical conditions, we observed differences in stage of disease and consumption of medical resources by race/ethnicity in patients with bladder cancer. Resource use assessment is essential to ensure availability of adequate resources and identify specific areas of need.

BACKGROUND

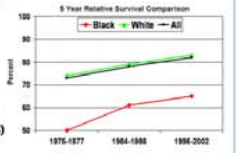
- In the US, highest risk of bladder cancer is experienced by:
  - Men - 4 times that for females, 4th most common cancer vs. 12th
  - Anglo Americans (Whites) - twice that for African Americans (Blacks)
  - Smokers - twice that for non-smokers
  - Workers in dye, rubber, leather industries (occupational exposure related to as many as 20% of cases)
  - Communities with high levels of arsenic in drinking water [1]
- Other suspected contributors or modifiers to bladder cancer development [2]
  - Chemotherapy and Radiotherapy
  - Metabolic differences in breakdown of carcinogens
  - Type of tobacco smoked – black air-cured 3 times risk vs. blonde

Other Facts about the disease…

- Generally not fatal, death in patients is frequently from other causes.
- Recurrence of non-muscle invasive disease is common
- Non-muscle invasive disease is primarily treated outside the hospital
- If diagnosed and treated early, chance of progression to muscle invasive disease is low.

Racial differences – Black vs. White [1,2,3]

- Lower median all cause survival in months (54 vs. 125 P = 0.003) Lowest among Black females
- Greater proportion with aggressive histologies (9.7 vs. 2.4%)
- Greater proportion with advanced disease at diagnosis (≥T2 39 vs. 19%)
- Prevalence Females (5508 vs. 124,738) Males (11,882 vs.354,257)



GOALS

- Describe racial/ethnic differences among a nationally representative group of elderly bladder cancer patients in the United States for:
  - Socioeconomic and demographic characteristics
  - Disease characteristics at diagnosis
- Explore effect of patient and disease characteristics on resource utilization patterns.

METHODS

DATA SOURCE

SEER linked Medicare database

About the data source…

Collaborative linkage of 2 large population databases:

- National Cancer Institute's (NCI) Surveillance, Epidemiology, and End Results (SEER) registries. Provides detailed cancer information on *site, *histology, *stage, *grade and *extent of disease.
- Centers for Medicare and Medicaid Services (CMS) Medicare enrollment and claims files of covered health care services for persons in the SEER data. Provides *hospital, *physician, *outpatient, *home health, and *hospice claims.

About the Patients…

From SEER data selected bladder cancer patients diagnosed between May 1,1994 and Dec 31, 1996 with:

- ICD-O-2 Site Code of C67.0 – C67.9
- ICD-O-2 Histology Codes of 8120 - 8130 (Transitional Cell Papillomas and Carcinomas)
- No other malignancy and Age 65 or older at diagnosis
- SEER modified AJCC Stage 0–IV, not at death or autopsy

From CMS data further selected those whose coverage:

- Included Medicare parts A & B and not a result of ESRD
- NOT covered by a Medicare HMO

Included ALL claims for selected patients from 4 months prior to diagnosis through Dec 31, 1998 or death.

STATISTICAL ANALYSIS

Using SAS and SPSS applied the following analyses to test for racial/ethnic differences in:

Socioeconomic and Demographic characteristics

One-Way ANOVA – continuous variables,

non-parametric chi-square - categorical variables.

Resource Utilization

Independent Sample T-Tests with Levene's test for equal variance

Abbreviations: Inpatient (IP), Outpatient (OP), Home Health (HH), Skilled Nursing Facility (SNF). White non-Hispanic (W), Black non-Hispanic (B), Hispanic (H), Other includes Asian, Native Americans, all others and unknown (O).

RESULTS

Socioeconomic & Demographic Characteristics

Zip Code or Census Tract[1] Characteristic	White (4496)	Black (162)	Hispanic (40)	Other (165)	P value
Education (% not HS graduate)	26	41	33	26	<0.001
Mean Household Wealth 2006 $US	137,345	73,739	102,114	142,536	<0.001
Median Annual Household Income 2006 $US	38,274	25,768	32,229	36,041	<0.001
Mean Population Density	2645	7583	5162	7196	<0.001
Rural %	10	0	10	7	<0.001
Poverty %[1]	8	25	18	19	<0.001
SEER Registry Area	% of Total for each group				
CA	25	38	58	59	<0.001
CN	17	7	8	4	<0.001
GA	5	10	0	1	0.001
HI	1	0	0	22	<0.001
IA	16	1	0	2	<0.001
MI (Detroit)	17	38	8	5	<0.001
NM	4	1	25	1	<0.001
UT	5	1	5	1	0.017
WA	12	4	0	6	<0.001

*P value significant at the 0.05 level

Differences in all characteristics were observed.

- Black patients tended to live in zip codes with lowest levels of education, household income, wealth and in urban areas with highest levels of poverty.
- White patients lived in less densely populated areas with lower levels of poverty.
- Of the minorities, Hispanics were more likely to live in rural areas.

RESULTS Cont.

Patient and Disease Characteristics:

Characteristic	White	Black	Hispanic	Other	P value
	Race/Ethnicity				
Months of care post-diagnosis	33	29	32	34	0.006
Age (Mean)	77	78	77	76	0.234
Males (%)	70%	47%	70%	71%	<0.001
Comorbidity:					
% with any	63	57	65	64	0.389
% with > 2	6	7	5	5	0.752
% with Muscle Invasion at Dx					
No	58%	41%	65%	55%	<0.001
Yes	42%	59%	35%	45%	<0.001
% Progressed	19%	18%	15%	16%	0.624

* One-way ANOVA significant difference in means at the 0.05 level

Similarities in:

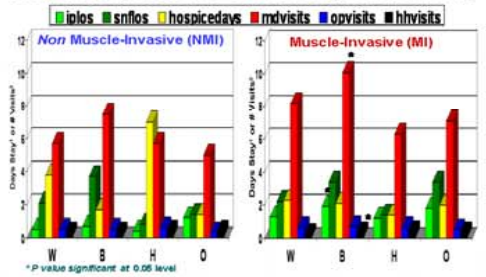
- Age
- Comorbidity
- Proportion of patients whose cancer progressed during the study

Differences in:

- Months of care after diagnosis
- Proportion of female cases
- Proportion with muscle invasion at diagnosis

Most noticeable among black cases

Mean Monthly Resource Utilization by Race/Ethnicity



*P value significant at 0.05 level

For those with non muscle-invasive disease:

- Compared to White patients, all racial groups indicated similar resource utilization patterns.

For those with muscle-invasive disease:

- Compared to White patients, significant differences were observed among Black patients who had:
  - longer inpatient stays (P=0.03), more doctor visits (P=0.03) and more home health care (P=0.02)

Gender and Stage

Unlike All other Race/ Ethnic Groups combined, Black women were significantly more likely (P=0.006) to have muscle invasive disease.

RESULTS cont.

Mean Monthly Resource Utilization by Race/Ethnicity & Gender

* P value significant at 0.05 level

Compared to All Other Men by disease stage:

- Black Men had comparable inpatient use regardless of stage.
- All women with muscle invasive disease, regardless of race/ethnicity had longer inpatient stays (P=0.03 for each).
- All patients had similar doctor visit patterns regardless of race/ethnicity, gender or stage.

Annual Resource Utilization by Race, Gender and Stage

	Study Totals				*US Totals	
	N	IP Days	MD Visits	Prevalence	IP Days	MD Visits
All Other F	1408	15,972	116,252	124,738	1,422,013	10,320,822
NMI	781	4686	51,546	68,606	411,635	4,527,989
MI	627	11,286	64,706	56,132	1,010,378	5,792,833
All Other M	3293	31,300	264,812	354,257	3,375,361	28,916,271
NMI	1919	11,514	131,260	205,469	1,232,814	14,054,084
MI	1374	19,786	133,553	148,788	2,142,546	14,462,188
Black F	86	1675	10,116	5508	107,004	647,476
NMI	27	259	3532	1707	16,392	223,338
MI	59	1416	6584	3801	91,212	424,138
Black M	76	1022	7426	11,882	159,266	1,157,782
NMI	40	288	2544	6297	45,342	400,519
MI	36	734	4882	5585	113,925	757,264

*Resource utilization for US estimated using study population totals and 2004 US prevalence estimates

LIMITATIONS

- SEER linked Medicare data do not include claims for some patients over the age of 65. Additional information may be viewed at http://healthservices.cancer.gov/seermedicare/.
- Study population includes only Medicare beneficiaries age 65 and older.

CONCLUSIONS

- Regardless of race/ethnicity, bladder cancer commands intense resource utilization among the elderly,
  - Primarily outside the hospital,
  - Hospitalization differences appear concentrated in females.
- Among this group of insured elderly patients, despite similar comorbidity and age, Black patients with bladder cancer had a different disease profile than other bladder cancer patients:
  - Were more likely to have muscle-invasive disease at diagnosis,
  - Had a higher proportion of female cases.
    - Female patients were more likely than males to be diagnosed with muscle-invasive disease.
- Major differences in resource utilization appear concentrated in women with muscle-invasive disease regardless of race/ethnicity.
- With major resource utilizations concentrated among those of with muscle-invasive disease, adherence to surveillance and current recommendations to timely diagnose and treat the disease and it's recurrences should be enforced across all race/ethnic groups.
  - Increased attention to Black men and women is needed.
  - Consistent use of surveillance and treatment guidelines may reduce incidence of advanced disease.

References: [1] American Cancer Society Cancer Facts & Figures 2007. Atlanta: American Cancer Society; 2007. [2] Kirkali Z, Chan T, et al. Bladder cancer: epidemiology, staging and grading, and diagnosis. Urology 66 (Suppl 6A): 4-34, 2005. [3] Prout GR, Wesley MN, et al. Survival experience of black patients and white patients with bladder carcinoma. Cancer;100(3):621-630, 2004.