Treatment disparities for patients diagnosed with metastatic bladder cancer in California

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Introduction

- Approximately 4% of all bladder cancer patients are diagnosed after the cancer has metastasized to other parts of the body.
- Survival for these patients is poor (5% five-year survival) and has not improved over time.
- Disparities in treatment may contribute to disparities in survival.
Introduction (continued)

- Chemotherapy is standard first line treatment and has been shown to improve symptoms and extend survival
- Yet disparities in receipt of this treatment have been shown by race, age and gender
- The contribution of SES to disparities has not been well defined
Objective

The purpose of this study was to identify disparities in receipt of chemotherapy for patients with metastatic bladder cancer by race, marital status and socioeconomic status.
Methods

- Patients diagnosed with metastatic (summary stage = remote) bladder cancer between 1988 and 2014 were identified through the California Cancer Registry. Follow up was through 12/2014.

- Neighborhood SES (nSES) was based on U.S. Census data on neighborhood characteristics of the patient address at the time of diagnosis, including educational attainment, occupation type, employment rate, median household income, poverty level, median rent, and house values.
Methods (continued)

- Univariate and multivariate logistic regression were used to identify predictors of no receipt of chemotherapy.
- Cox proportional hazard regression was used to estimate mortality from bladder cancer.
Results

- A total of 3,635 patients were identified
- More than 2/3 (68.7%) of patients were male
- More than half (52.3%) were married
- Less than half (45.8%) received chemotherapy as first course of treatment
Results (continued)

- Fewer than half of patients (42.7%) residing in the lowest SES neighborhoods received chemotherapy, while more than half of patients (54.7%) from the highest nSES group received chemotherapy.

- The proportion of patients receiving chemotherapy increased over time (p for trend < 0.0001), from 44.1% during 1988-1994 to 53.6% during 2009-2014.
Results (continued)

- Patients aged 65-74 and 75 years and older were significantly more likely not to receive chemotherapy than 20-64 year olds (OR=1.9, CI 95% CI 1.6, 2.3 and OR=4.6, 95% CI: 3.8, 5.5), respectively.

- Female patients were significantly more likely not to receive chemotherapy in crude analysis, but there was no significant association after adjusting for other predictors (p = 0.3915).
Similarly, non-Hispanic blacks were significantly more likely not to have chemotherapy in unadjusted analysis, but this result was no longer statistically significant in the adjusted model ($p = 0.2823$).

In both crude and adjusted analysis, patients diagnosed between 2009 and 2014 were significantly less likely not to undergo chemotherapy (adjusted OR = 0.7, 95% CI: 0.5, 0.8), indicating an increase in use of chemotherapy over time.
Results (continued)

- After adjustment for other factors, unmarried patients were significantly more likely not to receive chemotherapy (OR = 1.7, 95% CI: 1.5, 2.0).

- Patients from the lowest SES neighborhoods were nearly twice as likely not to have chemotherapy as those from highest SES neighborhoods (OR = 1.9, 95% CI: 1.5, 2.5).

- Even more striking was the combined effect of marital status and neighborhood SES
**Results (continued)**

**Combined effect of marital status and nSES on receipt of no chemotherapy**

<table>
<thead>
<tr>
<th>Marital Status</th>
<th>nSES Quintile</th>
<th>Adjusted † OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Married</strong></td>
<td>Highest</td>
<td>Ref</td>
</tr>
<tr>
<td></td>
<td>Upper-Middle</td>
<td>1.41 (1.05, 1.89)*</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>1.52 (1.13, 2.05)*</td>
</tr>
<tr>
<td></td>
<td>Lower-Middle</td>
<td>1.61 (1.19, 2.19)*</td>
</tr>
<tr>
<td></td>
<td>Lowest</td>
<td>2.06 (1.47, 2.91)*</td>
</tr>
<tr>
<td><strong>Single/ Divorced/ Widowed</strong></td>
<td>Highest</td>
<td>1.76 (1.25, 2.47)*</td>
</tr>
<tr>
<td></td>
<td>Upper-Middle</td>
<td>2.20 (1.60, 3.02)*</td>
</tr>
<tr>
<td></td>
<td>Middle</td>
<td>2.49 (1.83, 3.39)*</td>
</tr>
<tr>
<td></td>
<td>Lower-Middle</td>
<td>3.28 (2.36, 4.54)*</td>
</tr>
<tr>
<td></td>
<td>Lowest</td>
<td>3.10 (2.23, 4.31)*</td>
</tr>
</tbody>
</table>

†Adjusted for age, sex, race, and year of diagnosis  
*Indicates statistical significance
Results of survival analysis indicated that not receiving chemotherapy was significantly associated with higher mortality from bladder cancer (HR = 1.9, 95% CI: 1.8, 2.1).

Adjusting for other factors, unmarried patients had a less favorable prognosis than married patients (HR = 1.1, 95% CI: 1.1, 1.2).

Patients from lower nSES groups had higher mortality than those from the highest nSES quintile, though there was no consistent trend across groups.
Discussion

In this study, we observed that patients from lower SES neighborhoods were less likely to receive chemotherapy as part of first course of treatment than those from the highest nSES quintile, and that these patients were less likely to survive.
Unmarried people were less likely to receive chemotherapy, and this effect was stronger for patients from poor neighborhoods.

Patients who were unmarried were not only less likely to receive chemotherapy, but were more likely to die from metastatic bladder cancer.
Conclusions

- Results of this study illustrate continued disparities in treatment and survival for cancer patients, with both socioeconomic status and marital status having a greater effect than gender and race.
- Health systems need to continue to address barriers in access to care.
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Questions?