The Road Less Traveled: Does Bladder Cancer Care Differ Between Rural and Urban Texas?

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About me

2002: M.D. (Columbia)
2007: Urology residency (Columbia)
2010: Urol Onc fellowship (MDACC)
   - 2 years basic lab research
2010-present: MDACC Dept of Urology
   - High volume cystectomy practice
2012-14: CERCIT Scholar program and Masters in Clinical Research (UTH)
Objectives for today

- Define basics of bladder cancer (< 5 mins)
- Outline my interests in bladder cancer research
- Define a worthwhile project on bladder cancer in Texas
  - I am new to this and I am open-minded to suggestions!
Bladder Cancer

- Common
- Costly
- Can be deadly

Proper management is critical

Most patients managed by local urologist

Estimated Deaths

<table>
<thead>
<tr>
<th>Site</th>
<th>Males</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lung &amp; bronchus</td>
<td>87,750</td>
</tr>
<tr>
<td>Prostate</td>
<td>28,170</td>
</tr>
<tr>
<td>Colon &amp; rectum</td>
<td>26,470</td>
</tr>
<tr>
<td>Pancreas</td>
<td>18,850</td>
</tr>
<tr>
<td>Liver &amp; intrahepatic bile duct</td>
<td>13,980</td>
</tr>
<tr>
<td>Leukemia</td>
<td>13,500</td>
</tr>
<tr>
<td>Esophagus</td>
<td>12,040</td>
</tr>
<tr>
<td>Urinary bladder</td>
<td>10,510</td>
</tr>
<tr>
<td>Non-Hodgkin lymphoma</td>
<td>10,320</td>
</tr>
<tr>
<td>Kidney &amp; renal pelvis</td>
<td>8,650</td>
</tr>
<tr>
<td>All Sites</td>
<td>301,820</td>
</tr>
</tbody>
</table>
Bladder Cancer Staging

- Noninvasive
  - Lamina Propria
  - Urothelial layer (mucosa)
  - Urethra

- Invasive
  - Ureters
  - Muscularis Propria
  - Perivesical Fat
  - Adjacent organs

Stages:
- Tis: Carcinoma in situ
- Ta: Tumor confined to the urothelium
- T1: Tumor invades lamina propria
- T2: Tumor invades muscularis propria
- T3a: Tumor invades perivesical fat
- T3b: Direct invasion of bladder wall or adjacent organ
- T4: Tumor invades adjacent tissue or structures
At MDACC, we use low-grade vs. high-grade
Grade
LG non-invasive  HG non-invasive
LG invasive      HG invasive

Stage

Remove bladder
Remove pathologist
Non-invasive bladder tumors

Risk defined by:

<table>
<thead>
<tr>
<th>Prior recurrence rate</th>
<th>Number of tumors</th>
<th>Tumor size</th>
<th>Ta vs. T1</th>
<th>LG v. HG</th>
<th>Concomitant CIS</th>
</tr>
</thead>
</table>
Probability of Recurrence

1 year: 15.0%
5 years: 31.0%

Risk of recurrence: Low

Probability of Progression

1 year: 0.2%
5 years: 0.8%

Risk of progression: Low
Risk-based treatment

Low-risk:

- Complete resection to remove all visible lesions within bladder
- Single-shot MMC if bladder deemed intact
- No other adjuvant intravesical therapy (eg, no BCG)
- Surveillance cystoscopy in clinic
- Smoking cessation clinic referral
Intermediate Risk

- Intravesical BCG immunotherapy
  - Induction x 6 wks, maintenance at 3, 6, 12, 18, 24, 36 mos.
- Intravesical chemotherapy (Valstar, adria, MMC, etc)
- Early cystectomy
- Smoking cessation
- Lifestyle modification

Lamm et al, J Urology 2000;163: 1124-9
High-risk superficial disease

- high progression risk
- BCG-failure
- Micropapillary histology
- LVI

Options:
- Cystectomy
- BCG
- Intravesical chemo
- Clinical Trial
Muscle-invasive bladder cancer

- Gold standard therapy: radical cystectomy
- Can also give chemotherapy

- Invasive cancer diagnosed
- Staging workup completed (reTUR, EUA, CT CAP)
- Chemotherapy x 3-4 cycles to ALL patients (~2 months)
- Cystectomy

- Invasive cancer diagnosed
- Staging workup completed (TUR/EUA, CT CAP)
- Immediate cystectomy
- Chemotherapy only to patients at high risk for recurrence
In brief

- Low-risk: observe
- Intermediate-risk: BCG
- High-risk: cystectomy
- Muscle-invasive: cystectomy +/- chemo
Case presentation

Chief complaint:
- Bladder cancer

History of Present Illness:
- 86M with solitary TaLG bladder tumor diagnosed in 2010
- Standard of care: no further treatment
- Patient treated with BCG (developed BCG sepsis)
Lesson

- Patient overtreated for low-risk tumor
- Suffered serious complication
- Commuted long way to MDACC for 2nd opinion

Was the trip worth it? Should he have come earlier?
Recurring themes in my clinic

- Patient mismanaged locally – presents to MDACC after damage has already been done

- Patient presents to MDACC for 2nd opinion even though local urologist has done everything right
Is tertiary care worth it?

- Yes for complicated surgery
- What about for “simple” cancers?

Mayer et al, BMJ 2010
Goossens-Laan et al, Eur Urol 2011
Kim et al, BJU Int 2012
Morgan et al, J Urol 2012
A universally devastating journey

2012: 110,000 new cases and 39,000 deaths

Many others living with cancer

Most of Texas is medically underserved

Many Texans forced to travel hundreds of miles for cancer care

Significant drain on patient resources ($$, emotional, time)

http://www.texascancercouncil.org/impact/hospitals_2.html
**Bladder Cancer Care in Texas**

Why study bladder CA?

- Common (5th most common malignancy)
- Costly (#1 most expensive cancer)
- Deadly (median survival < 1 year for advanced disease)
- Multiple risk factors common in Texas (smoking, aromatic amines*)

*at risk: oil/gas industry, motor mechanics, rubber workers, truck/bus drivers, textiles workers, those exposed to diesel exhaust, pesticides, hair dyes
Objective

To determine if quality of bladder cancer care differs between rural Texas and developed Texas
Definitions

“Bladder Cancer Care”
- Adherence to guidelines?
- Outcomes?

“Rural” vs. “Developed”
- By county?
- Population cutoff?
- Quantiles?
- Distance to nearest metropolis?
West Texas: younger and less educated
Rural Texas: Poorer, less insured & less English-speaking

www.statecancerprofiles.cancer.gov
Rural Texas: smokes less (?)

Screening and Risk Factors for Texas
(2000-2003 Bias-Adjusted Modeled Estimate Combining BRFSS & NHIS)
Ever Smoked
All Races (includes Hispanic), Both Sexes, Ages 18+

Created by statecancerprofiles.cancer.gov on 01/10/2013 12:12 pm.
Small Area Estimates is the source for this data.
Estimates are based on a statistical model which combines information from the Behavioral Risk Factor Surveillance System and the National Health Interview Survey to correct for nonresponse and undercoverage bias and are enhanced in small areas by borrowing information from similar areas across the nation. For more information, visit http://statecancer.gov.

High specificity means that there are sufficient responses from within the area to support the estimate. As sample size decreases, estimates increasingly rely on data from other similar areas across the US and may not reflect local conditions.

www.statecancerprofiles.cancer.gov
Bladder cancer incidence and deaths clustered to East Texas

Data suppressed for most of Texas

www.statecancerprofiles.cancer.gov
Specific Aims

1) Establish a Bladder Cancer Atlas of Texas by zip code (incidence and mortality)

2) Assess bladder cancer care in Texas

3) Compare quality of care across regions
Aim 1: Bladder Cancer Atlas
Aim 2: Bladder Cancer Care

Adherence to guidelines
- HG disease: cystoscopy every 3-4 months or cystectomy
- T1HG or CIS: BCG or cystectomy
- T2: cystectomy vs. chemoRT vs. chemo

Outcomes
- Noninvasive: recurrence (and progression?)
- Invasive: survival
Aim 3: Compare quality of care

- Rural Texans versus urban Texans
  - Lump zip codes into 2 categories (R or U)

- Stationary vs. traveling rural Texans
  - Use home and MD zip code to categorize
  - R/R = stationary
  - R/U = cancer commute
TCR: Bladder Cancer

Incident Cases

1995: 2173
1997: 2163
1999: 2252
2001: 2433
2003: 2383
2005: 2220
2007: 2252

Values are in units of 1000.
TCR: Bladder Cancer Demographics

**Gender**
- Male: 75%
- Female: 25%

**Age at Diagnosis**
- 65+ yrs: 18%
- <65 yrs: 82%

**Medicare Race**
- White: 90%
- Black: 5%
- Hispanic: 3%
- Other: 3%
- Asian: 1%
- Native American: 1%
- Unknown: 1%
Next steps

- Regulatory approval
  - TCR IRB
  - MDACC IRB

- Obtain data from TCR
  - Home zip, MD zip, stage, grade, treatments, survival outcomes
Other Avenues

- Obtain provider data
  - Provider-level analyses

- Distance to superfund sites
Summary

- Bladder cancer is common
- Regional variations may exist and are worth exploring
Thank you!