Stomach Cancer Trends & Potential Relationship to H. Pylori

Martin Whiteside, DC, PhD, MSPH
Director, Office of Cancer Surveillance
Tennessee Department of Health
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Goals of Study

• Describe the descriptive epidemiology of stomach cancer in Tennessee and other parts of the world.

• Present recent trends.

• Describe potential relationship to H. Pylori infection.
Stomach Cancer

- Globocan 2012: Fifth most commonly diagnosed cancer and third leading cause of cancer deaths worldwide

- During 2009-13 in the U.S., it was the 15th leading cause of newly diagnosed cases and cancer deaths

- During 2009-13 in TN, it was the 18th leading cause of newly diagnosed cases and 15th leading cause of cancer deaths

FIGURE 64. Death rates for cancer of the stomach, by gender and year of death, 1930–1998, United States. Source: Vital Statistics of the United States\textsuperscript{10–14}; see also the section entitled “Cautions in the Interpretation of Long-Term Trends Data” in the current article.
Major Causes of Stomach Cancer

- H. pylori chronic infection is the major cause of stomach cancer worldwide
  1. Class 1 IARC carcinogen in 1994, reconfirmed 2009
  2. Chiefly causes non-cardia gastric cancers
  3. Infects an estimated 50% of world’s population; lower prevalence in industrialized nations

- Other minor causes:
  1. Epstein-Barr Virus
  2. Low socioeconomic status
  3. Cigarette smoking
  4. Certain dietary factors, such as nitrates/nitrites in processed meat

<table>
<thead>
<tr>
<th>United States</th>
<th>South Carolina</th>
<th>California</th>
<th>Texas</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>938 army recruits</td>
<td>324 blacks</td>
<td>246 blacks</td>
</tr>
<tr>
<td></td>
<td>17-26</td>
<td>47 Hispanics</td>
<td>15-80</td>
</tr>
<tr>
<td></td>
<td>26%</td>
<td>38%</td>
<td>70%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>536 whites</td>
<td>239 whites</td>
</tr>
<tr>
<td></td>
<td></td>
<td>14% [66]</td>
<td>34% [59]</td>
</tr>
</tbody>
</table>

Khalifa et al. Gut Pathogens 2010, 2:2
There were 4594 total cases of gastric cancer diagnosed during the period 2004-2013 in Tennessee.

- Men accounted for the majority of cases, 60.4% (p<0.0001, chi-square).
- Black individuals accounted for 18.7% of all cases (p=0.007, black/white comparison, chi-square).

<table>
<thead>
<tr>
<th>Cancer Topography</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Stomach Cancers (C16.0 - C16.9)</td>
<td>4,594</td>
</tr>
<tr>
<td>Stomach - Cardia, NOS (C16.0)</td>
<td>1,305</td>
</tr>
<tr>
<td>Stomach - Non-Cardia (C16.1 - C16.6)</td>
<td>1,785</td>
</tr>
<tr>
<td>Overlapping lesion of stomach (C16.8)</td>
<td>241</td>
</tr>
<tr>
<td>Stomach, NOS (C16.9)</td>
<td>1,263</td>
</tr>
</tbody>
</table>
Trend Statistics

TN Incidence Trend, All Stomach Cancers, 2004-13

Age-Adjusted Rate/100,000


APC All Races: 0.345, p=0.391; APC White Race: 0.153, p=0.733; APC Black Race: -0.392, p=0.768
Trend Statistics

TN Incidence Trend, Cardia Stomach Cancers, 2004-13

All Races: 4.327, p=0.007*; APC White Race: 4.234, p=0.005; APC Black Race: 0.969, p=0.873
Trend Statistics

TN Incidence Trend, Non-Cardia Stomach Cancers, 2004-13

APC All Races: 0.817, p=0.336; APC White Race: -0.095, p=0.927; APC Black Race: 1.562, p=0.338
Summary of Tennessee Trend Statistics

- Stomach cancer incidence in TN appears to have bottomed and largely stabilized.

- Stomach cancer of the cardia region statistically significantly increased about 4.3%/year from 2004-2013.

- Virtually all of the increase was due to changes in the incidence for white individuals.

- Cancers of the cardia region in black individuals were stable over this period.
Final Thoughts & Implications

• Could reducing H. pylori prevalence be influencing the topography of stomach cancer?

• We observed a statistically significantly decreasing trend in stomach cancers with topography NOS, -3.4%/annum. Have there been changes in diagnostic ability?

• Is there a commensal relationship between H. pylori and its human host? Emerging evidence suggests protective effect for a number of chronic conditions:
  1. GERD
  2. Childhood Asthma
Questions?