Geographic Disparities in Cancer Survival and Access to Care: Ovarian Cancer in Kentucky

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ABSTRACT

From 1995-2005, ovarian cancer accounted for 2.7% of new cancer cases diagnosed among women in Kentucky and was responsible for 4.7% of female cancer deaths in the state. The five-year survival rate for ovarian cancer is 45% for all stages combined. Multiple studies document a survival advantage for women with gynecologic malignancies when treated by a gynecologic oncologist. The authors used Kentucky Cancer Registry data for the years 1995-2005, geocoded to 5-digit ZIP code, to examine the hypothesis that ovarian cancer survival is higher among patients receiving treatment in areas where gynecologic oncologists practice. Their hypothesis was confirmed. A secondary goal of the study was to identify geographic areas of the state with lower overall access to care. Contrary to the expected pattern of low access to care in the Appalachian region of the state, their analysis indicated that access to successful treatment is a greater issue in the western portion of Kentucky.

Keywords: Access to Care, Geographic Information System (GIS), Gynecologic Oncologist, Kaplan-Meier Survival, Kentucky, Ovarian Cancer

INTRODUCTION

In the United States more women die from ovarian cancer than any other gynecologic malignancy, and ovarian cancer ranks fifth as an overall cause of cancer death in women. In the year 2008 it is estimated that 21,650 new cases of ovarian cancer were diagnosed, and 15,520 women died of the disease (Jemal, Siegel, Ward, Hao, Xu, Murray & Thun, 2008). Approximately 70% of the cases are advanced (Stage III or IV) when they are diagnosed, and no available screening test, including CA-125 or ultrasound, has ever proven effective in reducing mortality. Optimizing treatment is thus the most effective way to improve survival.

Optimal treatment for ovarian cancer involves a combination of surgery and chemotherapy. Surgery is almost...
always the first step, providing both a firm diagnosis as well as removing the tumor that causes symptoms. The quality of the initial surgery is a critical determinant of survival, because the amount of tumor remaining is predictive of outcome. A woman with no visible tumor at the completion of surgery will have a 5-year survival rate of approximately 40%, in contrast to a woman with tumor implants 2 cm in size or more remaining, who will have a 5-year survival of 15% or less. (Ozols, Rubin, Thomas & Robboy, 2004).

Gynecologic Oncologists (Gyn Onc) are specialists specifically trained in both the surgical management and the chemotherapeutic treatment of gynecologic cancers. Involvement of a Gyn Onc in the care of patients with gynecologic malignancies confers a significant survival advantage to those patients. Survival of women with advanced ovarian cancer was 26 months when treated by a Gyn Onc, as opposed to 15 months when such a specialist was not involved, according to a study of the statewide, population-based Utah Cancer Registry (Carney, Lancaster, Ford, Tsodikov & Wiggins, 2002). Improved survival outcomes under Gyn Onc treatment have been noted for other gynecologic cancers as well (MacDonald, Sause, Lee, Dodson, Zempolich & Gaffney, 2005).

Table 1 shows case distribution and 5-year survival rates of ovarian cancer for the U.S., by stage of diagnosis (American Cancer Society, 2008). In Kentucky, ovarian cancer accounted for 2.7% of new cancer cases diagnosed among women from 1995-2005 and was responsible for 4.7% of female cancer deaths in the state (Kentucky Cancer Registry, 2009). These percentages are overshadowed by the burden of lung cancer in Kentucky, which has the highest rates in the nation. The Kentucky incidence rate of 12.5 per 100,000 is lower than the U.S. rate (13.1), but the state has a higher mortality rate: 9.4 vs. 9.0 (Jemal, Murray, Ward, Samuels, Tiwari & Ghafoor, 2005).

A preliminary study of Kentucky gynecologic cancers from 1995-2003 showed no relationships between stage of diagnosis and age, poverty, or percent of population rural (Hanchette & Gordinier, 2007). Using more detailed treatment data, this study examines the following hypothesis: ovarian cancer survival is higher among patients

<table>
<thead>
<tr>
<th>Stage</th>
<th>Distribution (%)</th>
<th>5-Year Survival Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local</td>
<td>19</td>
<td>92.4</td>
</tr>
<tr>
<td>Regional</td>
<td>7</td>
<td>71.4</td>
</tr>
<tr>
<td>Distant</td>
<td>68</td>
<td>29.8</td>
</tr>
</tbody>
</table>

Table 1. Case distribution and 5-year survival rates by stage of diagnosis (American Cancer Society, 2008)