Stage of Disease and Likelihood of Initial Surgical Intervention in Colon Cancer Patients: An Exploratory Analysis of the SEER Database
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Introduction

- Colorectal cancer (CRC) remains as the third leading cause of cancer-related deaths in the United States.
- The decreasing mortality rate has been attributed to increased screening rates and surgical polyp removal.
- A large proportion of patients with colon cancer can be cured by surgery alone.
- The relationship between stage of disease in patients with colon cancer and the likelihood of receiving surgery as a primary treatment has been understudied.

Objectives

To explore the association between stage at diagnosis with primary surgical treatment for patients with colon cancer.

Methods

- Data Source
  - The National Cancer Institute Surveillance, Epidemiology, and End Results (SEER) public use 1973-2004 data.
  - The SEER program publishes annual cancer incidence and survival data collected from population-based cancer registries across the United States.

Study Population

- Patients with colon cancer, aged 18 or older, with known stage of disease.
- Stage of disease was defined as either local, regional, or distant.
- Primary outcome of interest: surgery as primary treatment for disease (yes vs. no).
- Other study variables: race, marital status, sex, tumor histology, tumor location, and age at diagnosis.
- Statistical Analysis
  - Chi-squared tests to assess the frequency of stages at diagnosis and to provide demographic and disease data for the patients.
  - Univariate and Multivariate analysis to assess for the association between stage at diagnosis with surgical treatment for patients with colon cancer.

Results

Table 1. Description of Study Patients, %

<table>
<thead>
<tr>
<th>Race</th>
<th>Localized</th>
<th>Regional</th>
<th>Distant</th>
<th>P-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>24.55</td>
<td>15.59</td>
<td>15.61</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>White</td>
<td>75.45</td>
<td>84.41</td>
<td>84.39</td>
<td></td>
</tr>
<tr>
<td>Hispanic</td>
<td>Reference</td>
<td>Reference</td>
<td>Reference</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Unadjusted and Adjusted Odds Ratios for having surgery

<table>
<thead>
<tr>
<th>Race</th>
<th>Unadjusted OR, [95% CI]</th>
<th>Adjusted OR, [95% CI]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black</td>
<td>0.91 [0.79, 1.05]</td>
<td>0.91 [0.79, 1.05]</td>
</tr>
<tr>
<td>White</td>
<td>Reference</td>
<td>Reference</td>
</tr>
<tr>
<td>Hispanic</td>
<td>Reference</td>
<td>Reference</td>
</tr>
</tbody>
</table>

Limitations

- This study did not take into account the presence of medical comorbidities which may have impacted the likelihood of a patient receiving primary surgical treatment.
- SEER data is observational and cannot be used to establish a causal relationship.
- “Unknown” or “not otherwise specified (NOS)” data limited usable cases in SEER.
- SEER database does not report chemotherapy statistics, which is a potential confounder for these results.

References

   https://www.cancer.org/cancer/colorectal-cancer/about/key-statistics.html