Peripheral Blood Lymphocyte Counts and Survival in Breast Cancer

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The lymphocytes in the peripheral blood of patients with breast cancer were studied. Peripheral blood lymphocyte counts were found to be significantly lower in the short-survivors when compared with the long survivors.

Lymphocyte count may be a host factor, that influences survival in breast cancer.

Key words: Lymphocytes, breast cancer, survival.

Recent interest has grown in defining host factors in resistance to cancer. BERG [1] found a significant correlation between the high degree of inflammation — present both in the primary tumor and in regional lymph nodes — and the longer survival in breast cancer. The sinus histiocytosis of regional lymph nodes has been demonstrated to be an important prognostic factor [5, 9]. The higher concentrations of lymphocytes in the perfusing blood provide a better immune response [2]. Lymphocytes are the major representatives of cell-mediated immune mechanism and the lymphocyte count is an index of cellular-immune competence [6].

The present study is a retrospective analysis of absolute blood lymphocyte counts in two groups of breast cancer patients: short-survivors and long-survivors.

Material and Methods

From our workers we selected — as a control group — 100 healthy women not to be exposed to ionizing radiation.

Long-survivors are those women who have lived more than 20 years after diagnosis of breast cancer and were treated by radical mastectomy and pre- or postoperative radiation and alive in July 1974. These criteria were met by 66 patients.

Short-survivors in this study are those 78 women who died within 5 years of an initial diagnosis of breast cancer and they had been treated by the similar therapy to the long-survivors.

Hospital charts were examined for records of white blood cell counts and differential counts of white cells at the time of diagnosis. The absolute lymphocyte count was then calculated from the percentage of lymphocytes in the total leukocyte count.

Statistical analysis was done by Student's t-test.
Table 1

<table>
<thead>
<tr>
<th>Survival</th>
<th>Stage</th>
<th>Leukocyte counts per µl</th>
<th>Lymphocyte counts per µl</th>
<th>Regional axillary met.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>I</td>
<td>II</td>
<td>III</td>
<td></td>
</tr>
<tr>
<td>Less than</td>
<td></td>
<td>15.4%</td>
<td>64.1%</td>
<td>20.5%</td>
</tr>
<tr>
<td>5 years (78)</td>
<td>(12)</td>
<td>(50)</td>
<td>(16)</td>
<td></td>
</tr>
<tr>
<td>More than</td>
<td></td>
<td>45.5%</td>
<td>54.5%</td>
<td>—</td>
</tr>
<tr>
<td>20 years (66)</td>
<td>(30)</td>
<td>(36)</td>
<td>—</td>
<td></td>
</tr>
</tbody>
</table>

Average blood lymphocyte count of 100 healthy women: 2004

Results

Comparison of the long-survivors with the short-survivors revealed the following (Table 1): 45.5% of the long-survivors had stage I, 54.5% had stage II, none of them had stage III. 15.4% of the short-survivors had stage I, 61.1% had stage II, and 20.5% had stage III. 22.7% of long-survivors had histologically confirmed positive axillary lymph node versus 46.1% of the short-survivors ($P < 0.01$).

Results of total leukocyte count and absolute lymphocyte counts are also given in Table 1.

Absolute lymphocyte counts for short-survivors were significantly lower at diagnosis than the corresponding counts for the long-survivors, 1529 per µl versus 1885 per µl ($P < 0.02$).

Absolute lymphocyte counts for healthy control group also were significantly higher than for short-survivors, 2004 per µl versus 1529 per µl ($P < 0.01$).

Discussion

Much is known concerning the lymphocytes as the carriers of cell mediated immune response. HELLSTRÖM et al. [3] found that blood lymphocytes from cancer patients inhibited the growth of the malignant cells in vitro. MEYER [6] supposed that the failure of radiation to improve survival after mastectomy may be a consequence of an induced defect in cellular immunity as reflected in the decrease of lymphocytes.

RIESCO [7] found a positive significant correlation between cancer curability and the total number of peripheral lymphocytes.

According to HOLMES’ study [4], the incurable breast cancer patients with higher blood lymphocyte count showed a longer survival than the incurable patients with lower lymphocyte count.
In our study it was found that the lymphocyte counts were lower in the short-survivors as compared to the long-survivors, the difference being significant \( (P < 0.02) \).

The higher lymphocyte count may indicate a better prognosis, so this factor may be used with others to determine prognosis in breast cancer.

References


