Incidence and Spatial Patterns of Childhood Cancer in Campinas-SP, Brazil

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BACKGROUND

In Brazil, near 32.9% of the population is under 19 years old and although cancers among this age group are rare, 11,530 cases among Brazilians were estimated for 2012. Based on the 14 Population-Based Cancer Registries report, the median incidence of childhood cancers corresponds to 154.3 per million. Our aim is to analyse the cancer incidence on children and adolescents in the Brazilian city of Campinas and to examine the Standard Morbidity Rates (SMR) spatial patterns.

METHODS

Data were retrieved of all individuals residing in Campinas, aged 0–19 years, diagnosed between 1996-2005. Cancers were classified according to the ICCC-3. Just the 4 most common groups were studied: Group I-Leukemias; Group II-Lymphomas and reticuloendothelial neoplasm; Group III-Central Nervous System and miscellaneous intracranial and intraspinal neoplasm and Group IX-Soft tissue and other extra osseous sarcomas. Age-standardized incidence rates were calculated using the direct methods and world standard population. A spatial Bayesian hierarchical regression model (taking into to account data heterogeneity and spatial autocorrelation), assuming that the number of cancer follows a Poisson distribution, was used to estimated the SMR in the 47 Health Care Unit Areas (HCA) of the Campinas-SP. The indirect method of standardization with standard population from Campinas was consider to estimate the expected cases and to remove the differences in the age and sex structure between areas.
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RESULTS

A total of 180 cases were diagnosed: 154-children (C) and 26-adolescents (A). The incidence rates shown in Tab. 1

Table 1. Frequency, Sex Ratio, and Incidence Rates per Million Inhabitants (1996-2005)

<table>
<thead>
<tr>
<th>Diagnostic group</th>
<th>Age (Years)</th>
<th>M/F</th>
<th>Crude Incidence</th>
<th>Standardized Incidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0 - 14 n(%)</td>
<td>15 - 19 n(%)</td>
<td>Total n(%)</td>
<td>0 - 14 (10^6)</td>
</tr>
<tr>
<td>I. Leukemias</td>
<td>80(51.9)</td>
<td>10(38.4)</td>
<td>90(50)</td>
<td>1.3</td>
</tr>
<tr>
<td>II. Lymphomas and reticuloendothelial neoplasm</td>
<td>28(18.1)</td>
<td>11(42.3)</td>
<td>39(21.6)</td>
<td>2.9</td>
</tr>
<tr>
<td>III. CNS and miscellaneous intracranial and intraspinal neoplasm</td>
<td>35(22.7)</td>
<td>3(11.5)</td>
<td>38(21.1)</td>
<td>0.7</td>
</tr>
<tr>
<td>IX. Soft tissue and other extraosseous sarcomas</td>
<td>11(0.7)</td>
<td>2(0.7)</td>
<td>13(7.2)</td>
<td>2.3</td>
</tr>
<tr>
<td>Total</td>
<td>154(100)</td>
<td>26(100)</td>
<td>180(100)</td>
<td>1.4</td>
</tr>
</tbody>
</table>

Although some HCA of the South and West present higher crude incidence rates, taking into account the spatial heterogeneity and the spatial autocorrelation no statistically significant differences in the SMR were observed among HCA (Fig. 2).

Conflict of interest: None
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CONCLUSION

Incidence in the majority diagnostic groups in Campinas-SP was similarly to previous reports from other Cancer Registries. The study of the cancer incidence rates and the analysis of the SMR spatial patterns can be used as baseline indicators of the quality of the healthcare system and as a framework for future improvements and health planning.

REFERENCES


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