Recent trends in childhood cancer incidence in Canada (2001–2013): a report from the Cancer in Young People in Canada (CYP) surveillance program

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Abstract

We have documented an increase of 0.4% per year for childhood cancer incidence from 1992 to 2013. Similar increases have also been observed in the other countries. The factors contributing to increasing incidence are not well understood. Surveillance of childhood cancer incidence trends can inform etiologic research, policy and programs.

This study offers a population-based basis for comparison to the Canadian Cancer Registry (CCR) by examining demographic and geographic variances in childhood cancer incidence trends in Canada during 2001–2013 using independent data source, the Cancer in Young People in Canada (CYP) surveillance system.

Methods

Data source

A total of 11,385 incident primary childhood cancer diagnoses among Canadian children under age 15 years were captured between 2001 and 2013. The data are from the CYP surveillance system, which collects data in 17 pediatric oncology centers across the country from 2001 onward.

Analysis methods

The average annual age-specific rates were calculated by period, sex, and geographical region for the 12 main diagnostic groups of the International Classification of Childhood Cancer (ICD-0). Temporal trends were examined by annual percent changes (APCs) and geographical region for the 12 main diagnostic groups of the International Classification of Childhood Cancer (ICD-0). The rates were standardized to the 2001 Canadian population to obtain age-standardized incidence rates (ASIRs) per million children. The annual ASIRs were not shown for the Territories because of small numbers of new cases.

Results

The most common cancers were leukemias, central nervous system (CNS) tumors, tumors, neuroblastomas, and soft tissue sarcomas.

The overall increase has been in the most recent period (2009–2013). From 2000 to 2013, childhood cancer was diagnosed at a rate of 163 new cases per million children, an average of approximately 915 cases per year. The average annual ASIRs of all cancers in the 2009–2013 period were lower in the Praries and higher in Ontario. The average ASIRs of all cancers combined trended to increase in British Columbia, Quebec, Atlantic, and the country as a whole over the three periods.

Conclusions

The overall rates increased the most in Ontario and increased non-significantly in the other regions from 2001 to 2013.

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Trends involving a small number of cases should be interpreted with caution as a Type I error may result. Comparison of the earlier CYP data to the CCR (November 2017 releases) shows that the average ASIR in CCR is higher than or equal to that in CYP C for each of the 12 main ICD groups during 2001–2013. The underreporting in CYP partially due to older children being treated in many pediatric health care centers.

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Given the limited understanding of pediatric cancer etiology, this study underscores the value of surveillance in creating opportunities to seek insights into the factors driving incidence trends. This knowledge may ultimately help inform public health policy and programs.

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References