

Occurrence of cancer among five-year survivors of childhood cancer

NCIN Data Briefing

Patterns of subsequent cancer diagnoses in childhood cancer survivors

Cancer among children is relatively rare and survival rates are high for most cancer types in this age group. However, some survivors of childhood cancer go on to develop a second cancer (as distinct from recurrence of their original cancer). As in the general population, most of these cancers occur after the age of 40. This Data Briefing explores the patterns of second cancers among people who had a childhood cancer diagnosed before the age of 15 in Great Britain and then had another cancer five or more years after their original diagnosis while still under 40 years of age. Methods and details of cases included/excluded can be found at <http://www.ccrq.ox.ac.uk/publications/databriefingmethodology.pdf>.

Between 1980 and 1999, 27,307 children in Great Britain were diagnosed with a malignant neoplasm or borderline or benign CNS tumour (excluding skin carcinomas) before the age of 15 years. Of these, 18,426 (67%) have survived at least five years. The annual number of five-year survivors rose from 777 among those diagnosed in the 1980s to 1,066 among those diagnosed in the 1990s, mainly because of increases in the survival rate for virtually all types of childhood cancer (Fig.1).

For this Data Briefing we identified those individuals who by the end of 2009 had a new diagnosis of cancer five years or more after their original childhood cancer while still under the age of 40.

By the end of 2009, under 3% (N = 510) of the childhood cancer survivors were identified as having a new cancer 5 years or more following their initial cancer. The proportions who had developed a new cancer varied according to the type of their original cancer, from 0.5% for neuroblastoma and other peripheral nervous system tumours to 3.7% for central nervous system tumours (Fig.2). Many of these survivors are still under 40 years old, so follow-up to age 40 is not yet complete. A national study of survivors who had their original cancer diagnosis before 1992 has shown that their cumulative incidence of subsequent cancer by the age of 40 is about 5%, or 4 times the rate in the general population¹.

KEY MESSAGE: Early adult primary cancers that occur after childhood cancers are extremely rare. They account for under 1% of all cancers diagnosed before the age of 40 and do not make a significant impact on the total cancer burden.

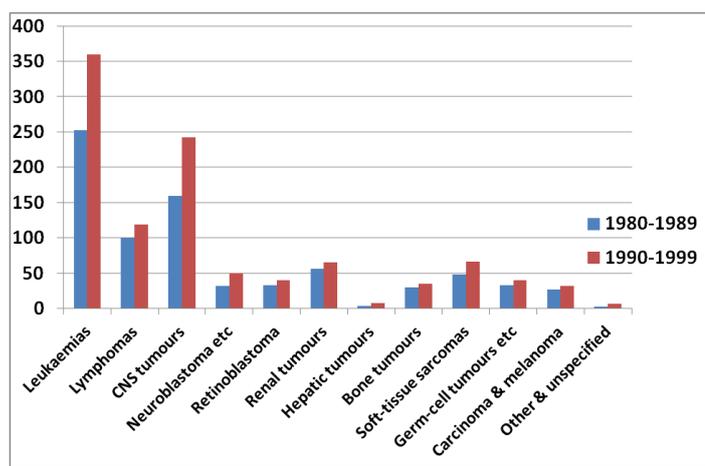


Fig. 1) Average number of 5 year survivors per year by period of diagnosis and type of childhood cancer

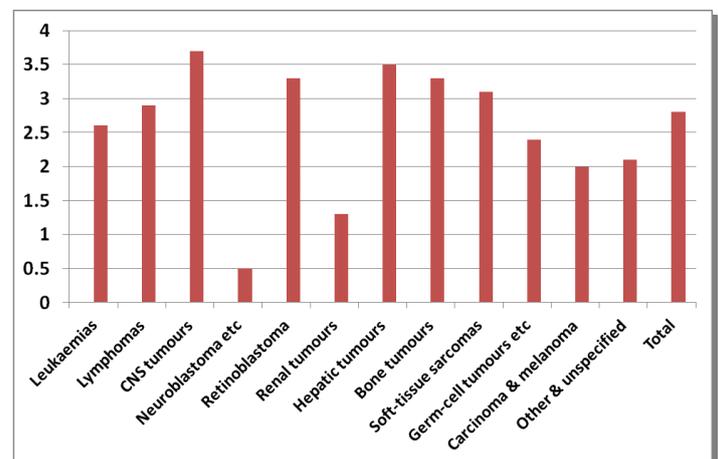


Fig. 2) Percentage of 5-year survivors originally diagnosed 1980-1999 with a subsequent cancer 5 years or more after their first cancer while under the age of 40 by type of childhood cancer

Subsequent cancer diagnoses in childhood cancer survivors as a proportion of all cancers diagnosed at 5-39 years of age

This part of the Data Briefing considers all cases of cancer diagnosed during 2003-2009 among people under the age of 40 who were 5-year survivors from childhood cancer. During this period, there were 472 cases of cancer diagnosed among persons under the age of 40 who had had a previous diagnosis of childhood cancer at least 5 years earlier. Their original diagnosis could have occurred at any time between 1963 and 2004. The most frequent types of subsequent cancer were meningiomas, other central nervous system tumours, carcinomas of the thyroid and breast, and melanomas (Fig.3). Overall, subsequent cancers among 5-year survivors of childhood cancer accounted for about 0.5% of all cancers diagnosed at 5-39 years of age, but the proportions were around 1% for bone tumours, thyroid cancer and central nervous system tumours other than meningiomas. It was estimated that 8-9% of people diagnosed with meningioma under the age of 40 were survivors of childhood cancer.

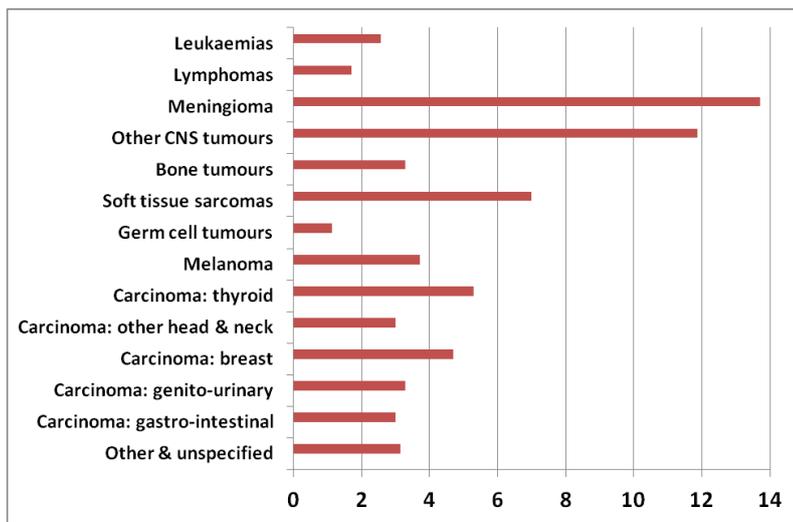


Fig. 3) Annual number of second cancers diagnosed before age 40 in 5-year survivors of childhood cancer in Great Britain, 2003-2009

Conclusion

By the end of 2009, fewer than 3% of childhood cancer survivors diagnosed between 1980 and 1999 had experienced a subsequent cancer diagnosis. Based on an earlier national study, the eventual proportion diagnosed with a

subsequent cancer before the age of 40 is expected to be about 5%. Second primaries in survivors of childhood cancer account for less than 1% of all cancers before age 40 and they do not make a significant impact on the total cancer burden in the population.

Reference

Reulen RC et al. Long-term risks of subsequent primary neoplasms among survivors of childhood cancer. *JAMA* 2011; **305** (22): 2311-2319.

FIND OUT MORE:

The National Registry of Childhood Tumours (NRCT) is the lead Cancer Registry for cancer in children. Other information about childhood cancer including the methodology for this data briefing can be found at <http://www.ccrq.ox.ac.uk>

Other useful resources within the NCIN partnership:

Cancer Research UK CancerStats – Key facts and detailed statistics for health professionals
<http://info.cancerresearchuk.org/cancerstats/>

The National Cancer Intelligence Network is a UK-wide initiative, working to drive improvements in standards of cancer care and clinical outcomes by improving and using the information collected about cancer patients for analysis, publication and research. Sitting within the National Cancer Research Institute (NCRI), the NCIN works closely with cancer services in England, Scotland, Wales and Northern Ireland. In England, the NCIN is part of the National Cancer Programme.