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Original Research

Geographical variability in survival of European children with central nervous system tumours

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KEYWORDS
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Abstract Survival for childhood central nervous system (CNS) tumours varies across Europe, partly because of the difficulty of distinguishing malignant from non-malignant disease. This study examines bias in CNS tumours survival analysis to obtain the reliable and comparable survival figures.

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Europe;
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We analysed survival data for about 15,000 children (age <15) diagnosed with CNS between 2000 and 2007, from 71 population-based cancer registries in 27 countries. We selected high-quality data based on registry-specific data quality indicators and recorded observed 1-year and 5-year survival by countries and CNS entity.

We provided age-adjusted survival and used a Cox model to calculate the hazard ratios (HRs) of death, adjusting by age, site and grading by country.

Recording of non-malignant lesions, use of appropriate morphology codes and completeness of life status follow-up differed among registries. Five-year survival by countries varied less when non-malignant tumours were included, with rates between 79.5% and 42.8%. The HRs of dying, for registries with good data, adjusting by age and grading, were between 0.7 and 1.2; differences were similar when site (supra- and infra-tentorial) was included.

Several sources of bias affect the correct definition of CNS tumours, the completeness of incidence series and the goodness of follow-up. The European Network of Cancer Registries needs to improve childhood cancer registration and stress the need to update the International Classification for Cancer. Since survival differences persisted even when restricting the analysis to registries with satisfactory data, and since diagnosis of CNS tumours is difficult and treatment complex, national plans must aim for the revision of the diagnosis and the coordination of care, with adequate national and international networks.