

International patterns of incidence of neuroblastoma: pooled analysis of data from 192 population-based cancer registries

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Background: The neuroblastoma burden varies considerably between countries, likely reflecting inequalities in cancer services. Here we evaluated global differences related to neuroblastoma incidence in children.

Methods: We used the database of the International Incidence of Childhood Cancer study (IICC-3) to analyse global variations in neuroblastoma and peripheral nervous tumours incidence in period 2001-2010. We computed age-standardised incidence rates per million (ASRs) with corresponding 95% confidence intervals (95% CIs) to investigate differences across 14 world regions, five ethnic groups in the USA and four levels of Human Development Index (HDI). Pearson's correlation coefficients were computed.

Results: A total of 15,542 neuroblastoma cases and 255 peripheral nervous tumours were diagnosed in children aged 0-14 years. Overall, the peripheral nervous tumours ASR was 0.11 (95%CI: 0.10-0.13), whereas the ASR of neuroblastoma was 8.2 (95%CI: 8.0,8.3), ranging from 1.5 (95%CI: 1.1-2.1) in Sub-Saharan Africa to 10.9 (95%CI: 10.1-11.7) in Southern Europe. The neuroblastoma age-specific incidence peaked among infants in very high HDI countries, whereas no age-specific incidence peak was evident in low and medium HDI countries. The neuroblastoma ASRs in children (aged 0 to 4 years) were correlated with the level of HDI ($p < 0.001$), but not in the age group 5-19 years ($p = 0.24$). Among adolescents (aged 15-19 years), 464 neuroblastoma and peripheral nervous tumours were diagnosed (ASR = 0.2; 95%CI: 0.1-0.2).

Conclusions: This most recent assessment suggests that global incidence of neuroblastoma is affected by inequalities in cancer services between countries, because high incidence rates and younger age at diagnosis are observed in affluent countries. With an improvement of childhood cancer care provision in low resource settings, the global incidence of neuroblastoma is expected to increase.

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