

# Environmental factors may contribute to the development of some childhood cancers

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Environmental factors may be a contributory cause in the development of some childhood cancers, leading scientists have revealed.

Experts at Newcastle University, UK, have carried out pioneering analysis of neuroblastic tumours in children and young adults in northern England from 1968 to 2011.

Neuroblastic tumours are cancers of a special type of cell which is involved in the development of the nervous system outside of the brain and spinal cord and they are predominantly seen in children under the age of five.

The results of the study have been published by the journal *Environmental Health*.

Scientists identified 'temporal clustering' of cases. A total of 227 neuroblastic tumours were diagnosed and accumulations occurred in children throughout northern England in the 43 years studied.

The findings suggest that short-lived environmental factors may be involved in the development of the cancer. Exposures could include common infections such as influenza or possibly atmospheric pollution.

It is believed children would also require genetic changes to make them susceptible to the cancer. Experts say there is now the need for a larger national or international study to investigate the findings further.

Dr Richard McNally, from Newcastle University's Institute of Health and Society, is lead author of the study.

He said: "The causes of neuroblastic tumours are not very well understood, but both genetic and environmental factors are likely to be involved.

"Our study has found that neuroblastic tumours occur in mini-epidemics that are geographically widespread and occur at specific points in time.

"A primary factor influencing the incidence of these tumours may relate to exposure to [environmental factors](#) that vary over time as we found strong evidence of temporal clustering.

"We interpret this finding as suggesting that short-term environmental agents may be involved somehow in the initiation of the tumours."

The team obtained their data from the Northern Region Young Persons' Malignant Disease Registry, which has details of all cancers diagnosed in northern England from 1968 to the present day.

Temporal clustering is an irregular occurrence of cancer cases through time that are unable to be explained by chance.

The evidence for temporal clustering was largely restricted to males, and about a third of the total numbers of neuroblastic tumour cases studied were diagnosed in the first 18 months of life.

The study did have some limitations. By its nature, it was not possible to identify specific agents that may be involved in the development of cancers, although findings did indicate a feature of such agents.

Professor Deborah Tweddle, Professor of Paediatric Oncology at

Newcastle University, and honorary Consultant in Paediatric and Adolescent Oncology at Newcastle upon Tyne Hospitals NHS Foundation Trust, was part of the research team.

She said: "It is possible that an infectious agent might be linked with the development of neuroblastoma in some way. This might be indirectly affecting the immune system which normally seeks out and destroys cancer cells including neuroblastoma before they can take a hold."

The Northern Region Young Persons' Malignant Disease Registry is funded by the Newcastle upon Tyne Hospitals NHS Foundation Trust and [cancer](#) epidemiology research is supported by the North of England Children's Cancer Research Fund.

Dr Colin Muirhead, from Newcastle University's Institute of Health and Society, said: "Whilst the patterns seen in our study might indicate a role for environmental pollution, there is currently little other evidence to support this. There is clearly a need for a larger national or international study to investigate further."

**More information:** Colin R. Muirhead et al. Temporal clustering of neuroblastic tumours in children and young adults from Northern England, *Environmental Health* (2015). [DOI: 10.1186/s12940-015-0058-z](#)

Provided by Newcastle University

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