Epidemiological evidence for an infectious origin for childhood leukaemia

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Summary.

The results of descriptive analyses of leukaemia incidence data from North West England are interpreted as supporting at least two infectious mechanisms.

Introduction.

The aim of the study was to interpret the results of several analyses of childhood leukaemia data (Birch et al., 2000; McNally et al., 2000, 2001, 2002, 2003) from the Manchester Children’s Tumour Registry (MCTR), in view of current hypotheses regarding an infectious origin (Greaves, 1988; Kinlen, 1995).

Materials and Methods.

The MCTR is population-based and has been collecting case data from a geographically defined region of North West England since 1954. Trend tests, Knox and K-function space-time clustering tests (Knox, 1964; Diggle et al., 1995), ecological regression and geographical mapping were used to study the data on the leukaemias, broken down by sub-type (ALL, AML). For the most recent period (since 1980), ALL was further examined by immunophenotypic sub-type.

Results.

There was an increasing incidence of ALL, due mainly to an increase of the precursor B-cell sub-type in the childhood peak. Space-time clustering was evident for cases of ALL, aged 0–4 years, for the time period 1954–1985, mainly based on date of diagnosis and place of birth. For the time period 1980–2001, space-time clustering was confined to cases of precursor B-cell ALL, aged 18–54 months, based on date and place of birth. The incidence of ALL was greater in more densely populated wards, largely due to cases of non-precursor B-cell ALL.

Conclusions.

The studies present a complex picture, but are supportive of an infectious aetiology, particularly for precursor B-cell ALL. It is concluded that there may be at least two infectious mechanisms operating, with a different mechanism predominating in the earlier years from that in the later years.
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References.


