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Société canadienne de la sclérose en plaques

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Medical Update Memo

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Place of residence in childhood may influence development of MS risk

SUMMARY

A study by Canadian researchers of children and adults who have MS has found that the children were more likely to have Caribbean, Asian or Middle Eastern ancestry as compared to the adults, who were of predominately Caucasian and northern-European ancestry. The researchers suggest two hypotheses: that the place of residence during childhood determines the risk of developing MS, regardless of ancestry; or that individuals raised in an area of high MS risk, whose ancestors are from regions where MS is rare, develop MS at an earlier age. The study was published in the journal *Neuroepidemiology*, (February 21, 2006) and funded by the MS Scientific Research Foundation, which is related to the MS Society of Canada.

DETAILS

Researchers at The Hospital for Sick Children and St. Michael's Hospital, both in of Toronto, and at the University of Toronto and the University of British Columbia, compared ancestry of 43 children and 552 adults with MS. The children were registered at the Pediatric MS Clinic, Hospital for Sick Children, and the adults at the MS Clinic, St. Michael's Hospital. The investigators found that individuals whose MS developed during childhood (prior to age 18) were more likely to report Caribbean, Asian or Middle Eastern ancestry, and less likely to report European heritage, compared to people with MS who developed MS as adults. The pediatric-onset group had spent all of their childhood in Ontario, and 79 percent of the adult-onset group had spent some or all of their childhood in Ontario. Canada, including Ontario, is known to be an area of high risk for MS.

The researchers included Dr. Brenda Banwell, Hospital for Sick Children and University of Toronto; Julia Kennedy, Hospital for Sick Children; Dr. Paul O'Connor and Maureen Perara, St. Michael's Hospital; and Dr. A. Dessa Sadovnick and Irene Yee, University of British Columbia. Working from a hypothesis that childhood residence, more than ancestry, is a major determinant of MS risk, the researchers compared study results with census data for Ontario from 1971 and 2001. Investigators in Britain have observed the increasing frequency of MS in first generation individuals of Asian, African and West Indian ancestry in the United Kingdom. The study in Toronto is the first to examine this issue in children.

MS has been most often reported in people of Northern European descent, and Scotland, Northern Ireland and Canada are known to be high risk areas for the disease with prevalence exceeding 200 cases of MS per 100,000 population. In contrast, the prevalence of MS in low risk areas such as Asia, the Middle East and the Caribbean is less than five per 100,000. A question that has intrigued researchers for many years is whether people from "low risk" parts of the world maintain that low risk when they move to areas of high risk for MS. Ontario is an ideal location to examine that question. During the past 30 years, immigration to the province has been increasingly from areas of low MS risk.

The researchers found that over 90 percent of adults with MS in the study were of European ancestry. Data from the 1971 census – the time that most of the adults with MS in the study were growing up in Ontario – showed that 84 percent of the Ontario residents at that time were of European ancestry. In contrast, the children with MS in the study were more likely to have non-European ancestry compared to the adults. Less than 60 percent of the children were of European ancestry; more than 25 percent were of Asian ancestry; more than 10 percent were of Caribbean ancestry; and less than 10 percent were of Middle Eastern ancestry. The study findings reflect the characteristics of Ontario's increasingly multicultural population as indicated by the 2001 census data.

Study investigators suggest it is likely there will be greater ancestry diversity in the future adult MS population as Canadian-raised children reach the typical age of adult-onset MS. Future studies of the pediatric and adult MS populations over the next 15 years will provide more detailed information.

This research provides more insight into which populations may be at risk in developing MS. It is the interaction of genes and the environment that is most important in disease

causation, noted Dr. William J. McIlroy, national medical advisor. Work being carried out in Canada by Dr. Sadovnick and Dr. George Ebers, University of Oxford, and colleagues clearly indicates the importance of genetics in MS susceptibility. The world's largest study of genetic susceptibility to MS is taking place in Canada. It is supported by the MS Scientific Research Foundation.

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