*Short Communications***The Incidence of Type 1 (Insulin-Dependent) Diabetes in Toronto**R. M. Ehrlich¹, L. J. Walsh¹, J. A. Falk², P. J. Middleton¹ and N. E. Simpson³¹Departments of Pediatrics, Genetics and Virology, The Hospital for Sick Children, University of Toronto, ²Tissue Typing Laboratory, Toronto Western Hospital, Toronto and ³Departments of Pediatrics and Biology, Queen's University, Kingston, Ontario, Canada

Summary. An incidence of 9.0 out of 100,000 children under 19 years of age with Type 1 (insulin-dependent) diabetes was detected in Toronto during a 2 year prospective study. An increased number of cases occurred in the winter months of one of the years but not of the other during the study. The annual incidence was the same in each year. There were slightly more boys than girls but this was not significant. The diabetic children were significantly younger than their non-affected siblings. The incidence of Type 1 diabetes in Toronto is similar to other North American studies.

Key words: Type 1 diabetes, incidence, seasonal variation

The incidence of Type 1 (insulin-dependent) diabetes varies from community to community [1]. We report here the incidence, seasonal pattern, age and sex distribution of Type 1 diabetes diagnosed in Toronto from 1 October 1976 to 30 September 1978. These results are from a prospective study of the aetiology of diabetes mellitus.

Subjects and Methods

All children in Metropolitan Toronto under the age of 18 years who were diagnosed between 1 October 1976 and 30 September 1978 as having Type 1 diabetes were included. All had a typical history of excessive thirst and frequency of urination. Hyperglycaemia and ketonuria were present in all cases. The data on cases that did not present at the Hospital for Sick Children were obtained by reviewing the records of children admitted to other general hospitals in the

Metropolitan Toronto area. In Toronto, all children who develop diabetes are admitted to hospital. Care was taken to include only children who resided in the Metropolitan area since some hospitals at the periphery draw cases from outside Metropolitan Toronto. Data on age, sex and month of diagnosis were obtained on all these children. We believe that all the children who developed diabetes in Toronto were included.

Results

A total of 132 children of less than 18 years of age were diagnosed as having Type 1 diabetes during the 24 month period. There were 66 children diagnosed in

Fig. 1. The age distribution of children diagnosed as having diabetes in Metropolitan Toronto from October 1976 to September 1978. ▨ patients not diagnosed at the Hospital for Sick Children. □ patients diagnosed at the Hospital for Sick Children

of infection. The annual incidence, however, was the same in each year of the study.

In the present study we have obtained information on the incidence of Type 1 diabetes in Metropolitan Toronto. The finding of 9.0 cases out of 100,000 population under the age of 19 years is almost identical to the study of West et al. from Montreal [2]. Incidences in other countries vary from 3.7 in France, to 7.7 in England, to 13.2 out of 100,000 in Denmark [3–5]. In parts of Finland, the incidence is over 20 out of 100,000. Variable ascertainment probably accounts for minor differences in incidence, e.g. between England and Toronto. The higher incidence in Finland and the apparent low incidence in France may represent real differences in genetic susceptibility and environmental exposure of the study population.

A seasonal trend was noted with more cases in the winter months than in the summer over the 2 years of the study. The first year of our study showed no seasonal trend whereas the second did. Therefore, more long term studies are necessary to see if seasonal trends show any particular yearly pattern. Regardless of the seasonal trend, the total number of cases was the same in each year of the study. In addition, the month of diagnosis clearly does not mean the month of onset of the condition. It only reflects when the disease was diagnosed.

To our knowledge the difference between the mean age of the diabetic children and their siblings has not been previously reported. It suggests that the parents are older and the diabetic children are among the younger members of their families. The exact significance, if any, of this observation is however unknown.

The seasonal incidence showed a definite increase in the winter months which occurs from October to the end of March in Toronto (Fig. 2). There were 80 cases diagnosed in the winter months versus 52 in the summer during the 2 years of the study. However, in the summer of 1977 there were only four fewer cases (31 versus 35) than in the winter of 1976-77. In the winter of 1977-78, there were 45 cases or 34% of the total. This indicates a seasonal difference in the diagnosis of children with diabetes mellitus but it is not the same every year, compatible perhaps with outbreaks

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