

## RESEARCH POINTERS

## Does month of birth affect risk of Crohn's disease in childhood and adolescence?

Early factors seem to have a role in the development of Crohn's disease later in life. A few recent studies have shown that in utero or early infections—in particular measles<sup>1</sup>—are important risk factors, but other studies have failed to show an association.<sup>2</sup> A recent British study reported slightly increased risk of Crohn's disease in people born in the first half of the year.<sup>3</sup> If infectious agents potentially linked to Crohn's disease include some that are common at particular times of year, their seasonal variation might be reflected in the pattern of birth month in people with Crohn's disease.

### Participants, methods, and results

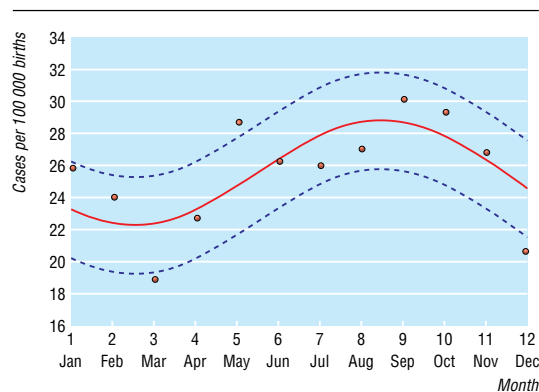
We studied the pattern of annual cyclical variation in month of birth for people who were born in Denmark and in whom Crohn's disease was diagnosed at age 20 years or under. We identified all cases of Crohn's disease in the Danish hospital discharge registry, which was established in 1977 and which has almost complete coverage of admissions to hospital throughout Denmark. From 1977 to the end of 1992, diseases were classified according to the international classification of diseases, eighth revision (ICD-8) (code for Crohn's disease 563.01). We obtained information on the number of births per month from 1957 to 1992 from the Danish population registry.

To study cyclical variation we used periodic regression in which the underlying regression equation has a sinusoidal form, and we fitted a sine curve to the observed cases per birth month. We adjusted the analysis for variation in the number of births by month. The calculation of the 95% confidence interval for the peak-trough ratio was based on large sample theory in non-linear regression models.

We identified 627 cases of Crohn's disease from 1 January 1977 to 31 December 1992 in people aged less than 21. The figure shows the seasonal pattern by month of birth. From the fitted curve in the figure we observed that the peak in births occurred in August and the trough in March, with a ratio of 1.30 (95% confidence interval 1.04 to 1.55). To assess the goodness of fit of the regression model, we compared the observed number of cases according to month of birth with the expected number using a  $\chi^2$  test ( $\chi^2 = 5.6$ ,  $df = 9$ ).

### Comment

We found a seasonal pattern in month of birth in this nationwide cohort of people with Crohn's disease in Denmark. We expect that variation in seasonal prevalence of an infectious agent, sensitivity of a fetus to the agent, subsequent events affecting susceptibility, and development of Crohn's disease would all attenuate any observable seasonality. Despite such



Seasonal variation in month of birth in people with Crohn's disease in Denmark (results obtained from periodic regression in a 12 month period; dotted lines represent 95% confidence limits)

attenuation our data provide some evidence that the occurrence of Crohn's disease in childhood may result in part from experience with one or more infectious agents operating in utero or early in childhood.

Our peak-trough ratio was higher than the recent 1.14 (95% confidence interval 1.01 to 1.30) reported from four regional registries in Britain.<sup>3</sup> In contrast, we found the highest risk in the second half of the year, not the first half. However, we focused only on incident cases with a diagnosis early in life, which may explain the somewhat stronger evidence of seasonality that we found. Furthermore, in Britain the incidence of Crohn's disease is much higher than in Denmark. If causal factors differ in the two countries, this might result in different seasonal patterns.

Contributors: HTS initiated and designed the study in collaboration with BN and KJR. HTS, LP, and KJR did the statistical analyses. KF collected and validated the data. HTS wrote the first draft of the paper, and all authors participated in the interpretation of the results and in editing the paper. HTS is the guarantor of the study.

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### Month of birth may be linked to risk of Crohn's disease later in childhood

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### Endpiece

#### Democracy

Democracy is also a form of worship. It is the worship of Jackals by Jackasses.

H L Mencken,

American editor, author, and critic, 1880-1951