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Authors' Reply

Koller and Lang have challenged our suggestion that Parkinson's disease may be starting at an earlier age than was previously reported.[1] Our hypothesis is based on the calculation of *minimal* age-specific prevalence ratios for cases seen at the University of British Columbia Health Science Centre Hospital (Vancouver) and the University Central Hospital (Helsinki). In order to obtain a more accurate estimate of prevalence, only those cases derived from well-defined populations serving the area were included. Patients referred from outside these communities were not part of the prevalence calculations. Finally, to obtain a point prevalence ratio, only those cases alive on July 31, 1985, were counted. These data allowed us to calculate *minimal* age-specific prevalence ratios. We regarded these figures as minimal estimates, since patients seen by other medical care providers, or those not coming to medical attention would not be counted. If we compare the tabulations derived from this method to data from properly conducted population-based studies, it appears that the prevalence ratios for those under age 50 are similar, whereas the minimal prevalence ratios from Vancouver and Helsinki for those 50 years of age and older are considerably lower than the figures from the complete population surveys. These findings are compatible with two interpretations: a) the study hospitals in Vancouver and Helsinki have seen all or nearly all subjects from the study area with young onset Parkinson's disease together with a relatively small proportion of patients with a later onset of their disease, or b) Parkinson's disease may be starting earlier than hitherto reported. Which of these possibilities is correct can only be answered in a properly conducted population-based survey.

In contrast to this, Koller and Lang conclude that Parkinson's disease is not occurring at an earlier age at onset. In support of their view they offer the 1883 observations of Gowers who noted that the onset of Parkinson's disease after age 65 was uncommon. However, it is difficult or impossible to draw conclusions concerning the epidemiologic patterns of disease distribution from the experience of a single clinician. The possibilities for selection bias are enormous. Furthermore, the life expectancy in the 1880's was quite different from the present figures. The elderly comprised a much smaller absolute number of individuals and constituted a much smaller proportion of the total population 100 years ago compared to the present. Hence, it is no surprise that clinicians would have seen fewer elderly patients with Parkinson's disease.

As a second line of evidence consistent with their view, Koller and Lang quote their own analysis of nearly 1100 patients seen in six medical centers in North America and Europe.[2] Incidence measures the frequency of addition of new cases of a disease within a specific population and is calculated for a given time interval and a given place.[3] Based on cases seen at these six centers, they calculated age-specific incidence rates. However, there are several major problems with the methods used as stated in their published report.[2] They note that all patients included in their study ". . . were seen in movement disorder clinics drawing from local and referral populations." They make no further mention of whether the referral patients coming from outside the communities served by the six medical centers were excluded from their calculations. If not, it is difficult or impossible to determine the population at risk from which the cases are derived. A second problem in meeting the definition of incidence is that there is no mention of the precise calendar years that constitute the time period over which incidence was measured. It is methodologically difficult to estimate incidence based on cases seen at a given medical center. One must be able to accurately measure onset. If we calculate incidence during 1980, we must be able to determine whether or not the disease began during 1980. If we accumulate all cases seen at a given institution between 1980 and 1983, some people with onset of their disease in 1980 may not have yet had a confirmed diagnosis in 1983. Furthermore, some patients with onset in 1980 may have moved out of the community or may have died before being evaluated at the medical center. Finally, patients may have been seen by other medical care providers serving the community or may not have been correctly diagnosed. Because of all of these major problems, we felt it was impractical to attempt to measure incidence based on cases seen at a particular medical center. If one compares the data derived from this approach to properly conducted population-based studies, marked discrepancies (particularly among the elderly) are apparent. Basing conclusions on the mean age of onset is not valid under these circumstances. If older onset cases were missed out of proportion to younger onset cases, one would expect the mean age at onset to be reduced.

In summary, one cannot answer the question as to whether the age at onset of Parkinson's disease is truly changing without a properly conducted population-based study. We have presented some preliminary evidence suggesting the need to readdress this issue with such a study.

H. Teräväinen,
University of Helsinki,
Helsinki, Finland
Bruce S. Schoenberg,
NINCDS, National Institutes of Health,
Bethesda, Maryland
D.B. Calne,
University of British Columbia,
Vancouver, British Columbia, Canada

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Critères de Mort Cérébrale

Monsieur l'Editeur,

Je voudrais féliciter les membres du comité qui ont établi les "critères de mort cérébrale" que vous avez publiés dans votre

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