Influenza and Parkinson's Disease

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LITTLE PUBLIC ATTENTION has been given to the studied relationship of swine influenza and parkinsonism. Prevention of deaths from a swine influenza epidemic is essential, of course, but prevention of Parkinson's disease may also prove to be an important reason for conducting immunization campaigns. A brief review of selected articles from the literature on the viral etiology of Parkinson's disease follows.

Poskanzer and Schwab, in 1961 (*1*), reported on their review of 871 cases of Parkinson's disease seen at Massachusetts General Hospital during a 15-year period, from 1945 to 1959. They predicted the disappearance of parkinsonism as a major clinical entity by 1980, based on epidemiologic data which showed that the mean age at onset of the disease among the 871 patients had increased by 37 years in a 35-year period. Their data demonstrated that in the period 1925–60, the mean age of onset varied according to the year of onset, with an increase of 1 year in age for each calendar year. Poskanzer and Schwab postulated a common exposure to a viral agent between 1918 and 1926. Subsequent reports by these investigators (*2–4*) supported their 1951 hypothesis. Brown and Knox (*5, 6*), Kaplan (*7*), and Leibowitz and Feldman (*8*) upheld Poskanzer and Schwab's postulate.

Kessler (*9, 10*), in reports of hospital- and community-based epidemiologic studies of Parkinson's disease in Baltimore, discussed degrees of relative risk factors. In Kessler's interviews of 468 patients with the disease, 14 percent of the study group recalled experiencing encephalitis, sleeping sickness, or Spanish influenza—in contrast to 5 percent of 468 controls. However, he concluded that his data could not

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provide conclusive evidence to support Poskanzer and Schwab's view that most parkinsonism cases stem from the encephalitis lethargica epidemic of 1918–20.

Nobrega and associates, in a 1964 article based on studies in Rochester, Minn. (*11*), also tended to disagree with Poskanzer and Schwab. In their studies, covering three decades, they saw little change in patients' mean age at onset of parkinsonism. Hull (*12*) also disagreed. He suggested that the mean age at onset has risen again to the pre-epidemic level because the disease, already common by 1918, became more prevalent after the influenza epidemic and in time the mean age at onset became lower. Hull estimated that about 30,000 new cases of parkinsonism may continue to occur annually. Hoehn (*13*) also believes that the disease will remain the major neurological entity that it was before the major epidemic of encephalitis lethargica. Hoehn points to the existence of two distinct clinical entities: (*a*) parkinsonism secondary to encephalitis lethargica, which had its greatest influence on the epidemiology of parkinsonism between 1920 and 1945 and (*b*) classic parkinsonism, which is associated with the steady advance in human longevity and which has undergone little change in the past 100 years.

Papers by Gibbs and Gajdusek (*14*) and Stanhope and associates (*15*) describe research findings on Guam, where an influenza epidemic was experienced among the Chamorro population in 1918. Parkinsonism dementia is unique to Guam, and it occurs in extraordinarily high rates. The investigators concluded that environmental influences predispose to Parkinson's disease and that the disease possibly may be a slow viral infection.

Most investigators agree that many if not most cases of Parkinson's disease are a result of viral infection and that the 1918–19 influenza epidemic is of significance. It is not clear, however, whether other neurological viruses also can cause parkinsonism. Certainly, Parkinson's disease occurred before 1918. It is unfortunate that we do not know more about the "flu" epidemics of 1889, 1895, and 1900.

Also important is a resolution of the key question concerning whether viruses remain present and active in cells of the nervous system and cause parkinsonism or whether such viruses damage cells on a single occasion and thus cause premature aging of the involved cells. The answer to this question may help to resolve the controversy regarding Poskanzer and Schwab's hypothesis. In any case, protection of the population against swine influenza remains an exciting prospect in terms of possible, if not probable, prevention of Parkinson's disease.

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