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EPIDEMIOLOGICAL FEATURES OF PARKINSON'S DISEASE (Literature review)

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Abstract

Issues Even in large-scale research, only a small number of instances of Parkinson's disease (PD) will be found. This can be especially difficult in analytical investigations when the causes of sickness vary among groups. Furthermore, large populations will be required to test ideas including numerous variables due to the complex nature of Parkinson's disease. Due to the relative rarity of Parkinson's disease (PD), screening of a sizable base population is necessary in order to find enough cases for research. In certain situations, health care registries in certain regions or among registered populations can be used to identify cases of Parkinson's disease. In some situations, PD cases are discovered outside the medical system, for instance by conducting door-to-door surveys.

Key words: *Epidemiology, Problems Parkinson, disease*

Introduction:

Problems Parkinson's disease (PD) is relatively rare, and even studies in large populations will find relatively few cases. In analytical studies, this can be particularly problematic if the causes of disease differ across populations. Moreover, because the cause of PD is multifactorial, large populations will be needed to test hypotheses involving multiple determinants. Because PD is relatively rare, a fairly large base population needs to be screened to identify a sufficient number of cases for study. In some cases, cases of PD can be identified through health service registries in specific geographic areas or among registered populations. In other cases, cases of PD are identified independently of the health care system, for example through door-to-door surveys. Although the latter approach is theoretically least likely to exclude cases, the time and cost associated with this approach is also the greatest [1].

Population-based surveys of PD are even more challenging because there is no diagnostic test for PD. Clinical features remain the only way to diagnose PD during life. The accuracy of clinical diagnosis may vary depending on the experience of the practitioner. For example, under some conditions, essential tremor can be confused with PD in up to 40% of cases (Mutch et al., 1986). Conversely, actual cases of PD may be missed, especially in older age groups where slowness and tremors may be regarded as “normal” or misdiagnosed as one of several other common conditions affecting this age group (eg, arthritis, stroke, dementia). A further challenge

is presented by people with both parkinsonism and dementia, which may be classified as a primary disorder in various epidemiological studies. The frequent use of antipsychotics in institutionalized older adults, especially those with cognitive impairment, may further complicate diagnosis in this age group. Postmortem confirmation of clinical diagnosis, although ideal, is rarely available in population settings. First, because survival in PD typically takes many years or even decades, very long follow-up is necessary. In addition, clinical diagnostic criteria do not accurately predict "classical" postmortem features of PD. Hughes et al. in one clinicopathological series, an error rate of more than 20% was observed. (1993) [2]. The same authors later suggested that the use of standard clinical criteria (eg the UK PD Brain Bank Criteria) improved the accuracy of clinical diagnosis in 100 patients (Hughes et al., 2001), of whom 90 were found to have idiopathic PD at post-mortem and clinical trial. 10 had other parkinsonian syndromes. In a report published the following year (n = 143), Hughes et al. (2002) calculated that the positive predictive value of clinical diagnosis for the entire group was 85.3%, with 122 cases correctly clinically diagnosed, 98.6% (72 of 73) for idiopathic PD and 71.4% (50 of 70) for idiopathic PD.) for other parkinsonian syndromes. However, since autopsy is most likely performed when the clinical diagnosis is unclear, misclassification may be overestimated in published series (Maraganore et al., 1999). However, in the few cases where postmortem confirmation of PD is possible, valuable information can be obtained (Ross et al., 2004). [3]. Uncertainty of clinical diagnosis may be an important factor in the design and critical analysis of epidemiological studies of PD. Including people without the disease and excluding those with the disease may result in underestimation or overestimation of the prevalence of PD. In both case-control and family studies, including subjects who do not actually have PD may obscure causation or even lead to associations with determinants of another disorder. In families, the mode of inheritance of a genetic defect can also be misinterpreted [4].

Positron emission tomography (PET) and single photon emission computed tomography (SPECT) are imaging techniques that detect and image the distribution of radioactive tracers in the body. In patients with PD in the earliest stages of the disease, decreased accumulation of tracers in the striatum contralateral to the affected limbs is observed using markers of the presynaptic dopaminergic system (Marek et al., 1996; Wenning et al., 1998; Benamer et al., 1998). 2003). Others have suggested that ultrasound may be a useful way to detect nigra skin damage in PD (Berg et al., 2002). Although these approaches are promising, their ability to distinguish normal from abnormal and distinguish PD from other forms of parkinsonism has not yet been developed to the extent that any of these methods can be used outside of research settings. In epidemiological studies, widespread use of these methods remains difficult because they are not widely available. However, combining these tools with other more easily characterized potential biomarkers, such as olfactory testing, may be useful in prospective studies to identify individuals "at risk" for developing parkinsonism, to identify those individuals who are eligible for PD protection measures, and to provide more effective methods for case ascertainment in genetic and environmental risk factor studies, where case misclassification and controls can significantly alter results (Siderowf et al., 2005; Stiasny-Kolster et al., 2005). [5]

Demography. The number of new cases of a disorder diagnosed during a given time interval within a defined population provides the most complete description of the number of cases of a disorder because this measurement is least influenced by factors affecting survival. This is especially important for a slowly progressing disease such as PD. However, as discussed above, because the time of onset of PD is not easily determined, incidence may vary depending on the definition of the disease as well as factors such as method of diagnosis and access to care. Studies using more intensive screening methods, such as face-to-face screening, may reveal higher rates

(de Lau et al., 2004) [6]. Crude estimates of incidence may also vary depending on the age and sex of the study population, and crude rates should be compared with this in mind. For example, the reported incidence of PD varies fourfold, from 4.5 to 19 per 100,000 population per year when the entire age spectrum of the population is considered (Rosati et al., 1980; Harada et al., 1983; Ashok et al., 1986 ; Granieri et al., 1991; Mayeux et al., 1995; Sutcliffe and Meara, 1995; Fall et al., 1996; Kusumi et al., 1996; Bower et al., 1999; Kuopio et al., 1999; MacDonald et al., 2000; Twelves et al., 2003; Van Den Eeden et al., 2003) [7]. However, when comparing studies using similar methods and adjusting the rates to a control population, this range decreases markedly (11.0–13.9/100,000 population per year; Van Den Eeden et al., 2003). Age is a key factor determining the incidence of PD. In all populations studied, PD is very rare before the age of 50 years (Kurland, 1958; Brewis et al., 1966; Rosati et al., 1980; Ashok et al., 1986; Granieri et al., 1991; Wang et al. , 1991; Tanner et al., 1992; Harada et al., 1983; Maillet et al., 1995; Morens et al., 1996a; Marras and Tanner, 2002; Van Den Eeden et al., 2003; Corell and Tanner, 2005). The incidence of PD increases steadily between the sixth and eighth decades of life in most populations, but some studies have observed a decline in incidence later in life. It is unknown whether this apparent reduction in PD incidence is the result of methodological problems, such as the greater difficulty of detecting and diagnosing PD in the very elderly (Bower et al., 2000), rather than an actual reduction in the incidence of the disease [8]. If the decline is true, then there may be a biological "window of vulnerability" for PD. Research into the factors that determine this could provide important information about the causes of PD. The incidence of PD is also higher in men than in women in most populations studied, although gender differences show greater worldwide variability than age-related differences. In a large study conducted in Northern California, the incidence of PD was 91% higher in men. than in women (19/100,000 for men vs. 9.9/100,000 for women, adjusted for age; Van Den Eeden et al., 2003). The question of whether the incidence of PD varies by racial or ethnic group has been examined in only a few studies. In northern California, the estimated incidence of PD adjusted for age and sex compared with the comparison population was highest in Hispanics (16.6/100,000), followed by non-Hispanic whites (13.2/100,000), and then in Asians (11.3/100,000).) and lowest in blacks (10.2/100,000; Van Den Eeden et al., 2003). When rates in other incidence studies were adjusted for the same comparison population, the incidence of PD in northern Manhattan was higher in blacks (18/100,000) than in whites (12.9/100,000) or "other" (11.8/100,000). 100,000), and the incidence of PD in men of Japanese and Okinawan descent in Honolulu was 13.1/100,000 (Mayeux et al., 1995; Morens et al., 1996a) [9].

Periodic fluctuations in incidence may result from any episodic exposure, such as an infectious process. Steady growth over the past few decades may indicate increasingly increasing pressures, such as those related to industrialization or lifestyle. Conversely, if the incidence of PD remains stable over time, recent environmental factors are unlikely to be important causes of PD. This possibility was considered in only two reports with different results. Reviews of the Mayo Clinic database from Olmsted County, Minnesota, found no change in age-specific incidence of PD between 1935 and 1990 (Rajput et al., 1984; Rocca et al., 2001). One limitation of this work is the small population size. Over 15 years, only 154 cases of PD occurred, resulting in low precision of these estimates. In contrast, in southwestern Finland, based on a larger number of cases, the estimated incidence of PD was increased in men, especially those aged 60 years and older, in 1992 compared with 1971 (Kuopio et al., 1999). Although it is possible that these differences may reflect temporal changes in environmental exposure in Finland but not in Minnesota, this cannot be determined from published studies. Has the incidence of PD changed

over time? Periodic fluctuations in incidence may result from any episodic exposure, such as an infectious process. Steady growth over the past few decades may indicate increasingly increasing pressures, such as those related to industrialization or lifestyle. Conversely, if the incidence of PD remains stable over time, recent environmental factors are unlikely to be important causes of PD. This possibility was considered in only two reports with different results. Reviews of the Mayo Clinic database from Olmsted County, Minnesota, found no change in age-specific incidence of PD between 1935 and 1990 (Rajput et al., 1984; Rocca et al., 2001). One limitation of this work is the small population size. Over 15 years, only 154 cases of PD occurred, resulting in low precision of these estimates. In contrast, in southwestern Finland, based on a larger number of cases, the estimated incidence of PD was increased in men, especially those aged 60 years and older, in 1992 compared with 1971 (Kuopio et al., 1999). Although it is possible that these differences may reflect temporal changes in environmental exposure in Finland but not in Minnesota, this cannot be determined from published studies [10].

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Parkinson's disease (PD) is the most common neurodegenerative disease in older adults. PD is the second most common neurodegenerative disease (after Alzheimer's disease). Indicators of primary incidence of sharpness range from 1.5 to 22 cases per 100 thousand in general work [12]. At the age of over 55 or 65 years, the primary incidence can lead to the occurrence of 410 and 529 cases per 100 thousand in the total work. The overall incidence is represented by indicators from 31 to 970 cases per 100 thousand in the general assessment, on average from 100 to 300 cases per 100 thousand in the general work. Different incidence figures are often due to the method of the study (sources lead to cases of the disease, diagnostic studies performed, use of a given diagnosis, etc.) and the demographic characteristics of the classification being studied [13]. The use of the traditional epidemiological approach to collecting basic indicators in PD is difficult due to objective reasons. Firstly, PD is mostly a sporadic disease with a long preclinical period and slow progression, and can last for several years until the patient begins to be bothered by certain symptoms and consults a doctor. Secondly, the diagnosis of PD is given primarily on the basis of developed conclusions, and there are no laboratory or instrumental (except SPECT) studies confirming this disease [14]. The methods currently being developed for diagnosing the preclinical stage of the disease are not yet of scientific interest, and are practically impossible. In this regard, it is important for this study to include a period of screening or diagnostic stages, which makes it possible to identify previously undiagnosed cases of the disease, the proportion of which can range from 24 to 48% [14,15]. The results of epidemiological studies may also be influenced by the way data are presented and the use of different diagnostic methods for Parkinson's disease. In addition, the incidence in men is higher than in women, with more significant sex differences in the older age group. The incidence increases with age, especially in the group over 65 years of age. In 2005, there were between 4.1 and 4.6 million PD patients worldwide. According to forecasts, by 2030 the number of patients may more than double and range from 8.7 to 9.3 million. This proves the progressive nature of the disease and requires its timely diagnosis and treatment [16].

For comparison: according to the Federal Statistical Observation for 2012, Parkinson's disease was registered in 102,225 people in the Russian Federation (in 2011 - 99,513 people). The overall incidence of Parkinson's disease, according to 2012 data, is 71.4 per 100 thousand population. population with a steady progression of the growth rate (Fig. 1). Every year, the overall incidence of Parkinson's disease among adults increases by an average of 3.0–4.0%. The number of newly diagnosed patients annually does not amount to 10 thousand cases [17]. In 2012, the primary incidence of the labor force population was 6.9 per 100 thousand population and 8.5 per 100 thousand population. The share of newly identified patients from the total number of registered cases averages 10.0%. In 2010–2012 stabilization of the primary incidence rate of Parkinson's disease, which, in the context of increasing life expectancy and the steady aging of the population, may indicate a lack of patients. Judging by the registry data, attention is drawn to a sharp increase in the overall incidence of Parkinson's disease up to 70–74 years of age, when the overall peak incidence remains, with a gradual decrease in mortality until 80–84 years of age and a sharp drop in overall incidence up to 85 years of age and older, which corresponds to requirements of the international register. data. With this incidence of Parkinson's disease at the age of 70–74 years and in the early years, men are higher than women: by 13.3% at the age of 70–74 years, by 16.9% at the age of 75–79 years, by 22. 8% aged 80–84 years and 80.9% aged 85 years and older. Discussion. According to the Register, the overall morbidity rates by 2012 were a total of 118.7 cases per 100 thousand population growth, the annual primary morbidity rates were the same as in 2010 and 2011. 25.7 and 22.7 cases per 100 thousand. Population growth, which indicates not only the increase in patients with PD, but also the effectiveness of annual monitoring of the disease in order to determine an objective picture of the incidence. In addition, according to official statistics, depending on our data, in the Russian Federation there is an annual under-detection of at least 32.0% of patients with Parkinson's disease, which requires the resulting system to identify this group of patients among the population and register them. According to the Register, an analysis of the age-sex structure showed that the peak incidence occurs at the age of 70–74 years, with a decline over 85 years [6, 7]. The incidence in men was higher at the age of 70–74 years and older [8]. In most of the studies, the incidence was also recorded higher in men than in women, when using different diagnostic methods, and gender differences were more significant in the older age group, i.e. e. the incidence in men increased with age. As you know, visibility increases with age, especially after 60 years. However, some studies show a decrease in incidence in older age groups, over 80 years of age [10, 11, 14], while others show an increase, which,

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