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Octogenarian parkinsonism – Clinicopathological observations

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ABSTRACT

Background: Parkinson's disease is the second most common neurodegenerative disorder for which old age is the best known risk. The proportion of elderly in the world is increasing, resulting in larger pool of people at risk for Parkinson's disease. Several other neurodegenerative disorders also produce Parkinson syndrome. Distinguishing between those variants is only possible with pathological examination of brain. No autopsy confirmed study of 80 years and older onset in parkinsonism cases has been reported. Clinical features of different PS variants, response to treatment and progression of disease in this age group remain to be determined.

Methods: Patients evaluated at Movement Disorders Clinic Saskatchewan are offered a choice of autopsy at no cost. The brain is studied by board certified neuropathologist.

Results: Thirty cases with clinical diagnosis of parkinsonism (onset ≥80 years) came to autopsy. Twenty-one (70%) had Parkinson's disease alone and two (6.7%) had an additional movement disorder. The progression of Parkinson's disease was accelerated, and dementia evolved earlier than reported in the younger onset cases. Most cases that tolerated an adequate dose improved on levodopa.

Conclusion: Parkinson's disease is the most common variant in the octogenarian population. Most patients benefit from levodopa, and should be tried on the drug when diagnosis of parkinsonism is made.

1. Introduction

Parkinson Syndrome (PS) also known as parkinsonism is a clinical diagnosis based on presence of at least two of the three, bradykinesia, rigidity and tremor [1–4]. It includes several known neurodegenerative disorders, the most common being the Parkinson's disease (PD) [1,5] characterized by marked substantia nigra (SN) neuronal loss and Lewy body (LB) inclusions. Definite diagnosis of the neurodegenerative variants is based on pathological findings [1,6–8], but drug-induced parkinsonism (DIP) cases have no known brain pathology [9].

The proportion of very old (≥80 years) [10] is increasing rapidly in the general population [11]. The incidence of both PS and PD is known to increase with age [11–13] – precipitously so after age 80 years [11].

The composition of different PS degenerative variants is reported to change with age. One study reported that PD accounted for a much smaller proportion of PS in the ≥80 onset cases compared to the younger onset cases [12].

Several PS studies have reported specifically on the age of onset. But definition of "old" age is inconsistent [2,10,14,15]. Since the underlying pathology was not identified in some reports [2,10], they may have included heterogenous PS variants and other disorders [1,7,8]. Two studies reported on pathology verified PD in different age of onset cases but excluded the other common degenerative variants [14,15]. One report [16] included different clinical-pathological variants of PS but did not consider the age of onset.

Every study which considered the age of onset found a more rapid progression in the older onset PD cases [2,10,15]. There is however no pathology confirmed study of ≥80 years onset cases.

We report on octogenarian autopsy-confirmed PS cases. The goal of this study was to identify: a) different PS variants, b) clinical features, and c) the course of disease.

2. Material and methods

All patients were evaluated and autopsied at the Saskatchewan Movement Disorders Program (SMDP) and Movement Disorder Clinic Saskatchewan (MDCS). Details published previously [18–20] will be described briefly. Flow chart (Fig. 1) is a summary of that.

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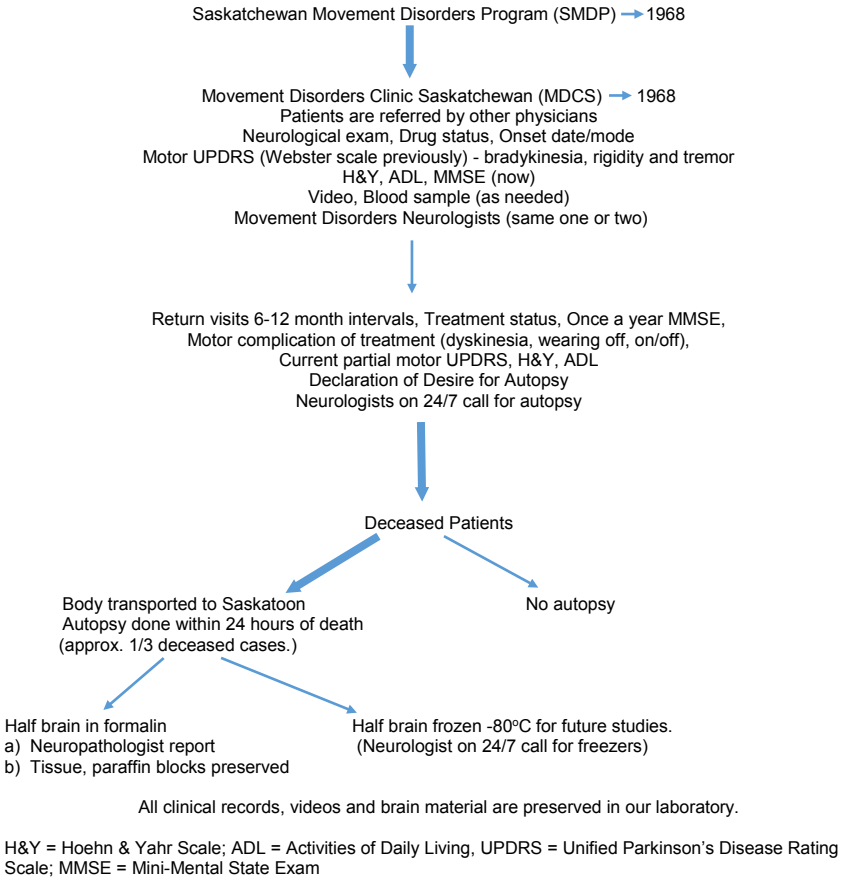

Fig. 1. Summary of saskatchewan movement disorders program and movement disorders clinic saskatchewan.

2.1. Patient population

The SMDP was started in 1968 and has been continuously run by the same one or two Movement Disorder (MD) neurologists (AHR, AR). Regular MD clinics are held in the two largest cities of the province. All residents of Saskatchewan carry general tax-funded healthcare insurance which covers all physician and hospitalization cost. Patients seen at MDCS are referred by other physicians – most by family physicians. Except for urgent cases, access to the MDCS is on a first-come basis [18,19].

2.2. Clinical data and patient follow-up

Clinical diagnosis of parkinsonism is made, by one or both MD neurologists [1,18–20]. Diagnosis of PS is made when at least two of three signs – bradykinesia, rigidity and resting tremor are observed. Clinical diagnosis of PD is made when the patient does not have other features such as prominent dysautonomia, corticospinal tract dysfunction or ophthalmoplegia [1,3,6]. Longitudinal follow-up and autopsy studies is a major focus of this program [19]. The data on sex, onset age, and presenting symptom are recorded at the first visit. In general, patients are followed at 6–12 month intervals. At each visit the patient is assessed by one or both MD neurologists. Drug treatment for parkinsonism, treatment benefit, adverse effects, motor symptom (bradykinesia, rigidity and resting tremor) severity are now measured by UPDRS [21] (previously by Webster scale [22]). Global severity of parkinsonism formerly measured by Hoehn & Yahr staging (H&Y) [17] is now assessed using UPDRS scale [21]. Motor complications of treatment – dyskinesia, wearing off, on-off and the activities of daily living are documented at each clinic visit. Mini-mental state examination (MMSE) is now performed once a year. Videos are made on all consenting patients. Between clinic visits patients have unrestricted telephone access to the neurologists. Those who cannot attend the clinic are assessed by Telehealth whenever possible.

Clinical diagnosis of dementia is based on cognitive decline considering age and education of the patient and where available the MMSE scores [19]. The cause of dementia is assigned by the neurologist after the neuropathology findings become available. When the brain reveals widespread cortical Lewy pathology, especially in the hippocampus and amygdala without other possible cause, it is regarded as the cause of dementia.

2.3. Autopsy procedure

At an opportune time patients seen at MDCS are provided declaration of desire for autopsy. They are assured that their decision will not impact the ongoing care [19]. Those who sign such declaration also sign authorizing the researchers to access the medical records from other sources. A copy of that declaration is provided to each family member. Most patients die at sites away from Saskatoon. Request for autopsy is initiated by the family of the deceased. Neurologists are on 24/7 call to arrange the autopsy. Permission for autopsy is granted by the next of kin after death of the patient. For the purpose of autopsy the body is transported to Saskatoon by a funeral home chosen by the family. All related expenses are responsibility of the neurologist. Autopsy is performed within 24 h of death. Immediately after autopsy the brain is divided at midline. One-half brain is frozen at −80 °C for future studies and other half fixed in formalin and studied by a neuropathologist

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