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A Case Report of Parkinson's Disease in a 70-year Man with Myasthenia Gravis

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ABSTRACT

Neurodegenerative diseases such as Parkinson's disease (PD) have increasing incidence, due to lifespan expansion. The association between PD and Myasthenia Gravis (MG) is uncommon, and so far, since 1987, 26 cases have been reported. This is a report of a 70-year-old man was referred into the hospital with ptosis, disfagia and dispnea. He was diagnosed with Suspected Myasthenia Gravis, Post Stroke Trombotik, Parkinson's Disease and Hypertension. The patient was admitted to the outpatient unit, received of treatment Pyridostigmine, Clopidogrel, Trihexylphenidil, Vitamine B1, Vitaminie B6, Vitamine B12 and Levodopa-Benserazide. Treatment guidelines by using some guidelines are also drug doses and do not have adverse side reactions during treatment. PD and MG very rarely occur together. case report or a series of brief cases reported in the literature, it is very important not to miss the diagnosis of MG in patients with PD, because the treatment implications are very important and greatly influence the prognosis. More basic research needs to be done to understand the pathogenesis of both diseases, to provide more therapeutic options and possibly change the approach of the patient, whose quality of life is determined by these two neurological diseases, which have an increased impact on increasing disability

Keywords: Parkinson disease; Myasthenia gravis; co-occurrence; case report

1. Introduction

Since 1987, when the first case report of a patient with PD who later developed MG was reported, 25 more cases have been published, of which MG preceded a diagnosis of PD in only two cases. Out of all 26 published cases, the majority were male—19 cases—and only seven were female, with a ratio of approximatively 3:1, ranging between 55 and 95 yearsold, with a medium of 72 years [1]. The prevalence of Parkin- son's disease (PD) in the elderly population exceeds 1 percent ac- cording to recent reports , whereas myasthenia gravis (MG) is much rarer . The expected prevalence of the combination of MG and PD can be grossly esti- mated to 3 cases per 6 million.[2]. Comorbid MG in PD has rarely been described in the literature. Olfactory dysfunction, sleep disorders, and dysphagia can occur in PD and MG. While there were no differences in initial symptom presentation in PD-MG versus PD alone, dysphagia was more common in the PD-MG group. Dysphagia alone or with ptosis ("apraxia of eyelid opening") or diplopia may represent clues for suspecting comorbid MG in patients with PD [3]

A male predominance, of approximately 2:1, has been observed. The majority of the patients had a diagnosis of PD, and MG was diagnosed few years later. Only in one patient MG predisposed PD . Seven patients were positive for AChR antibodies, two were negative, and for one there is no information available. Interestingly, five patients presented with a head drop as the first manifestation of MG, when in four of them head drop was the sole manifestation of MG [4]

Out of 41 individuals detected with parkinsonism, 15 were diagnosed with PD (36.6%), 13 with drug induced parkinsonism (31.7%), seven with vascular parkinsonism (17.1%), four patients had parkinsonism with associated features.[5]. Vascular parkinsonism (VP) accounts for 2.5–5% of all cases of parkinsonism in various population based and clinical cohort studies. VP develops as a result of ischaemic cerebrovascular disease, so aetiologically it is classified as secondary parkinsonism.[6]. Strokes confined to

the basal ganglia circuit can induce hyperkinetic movement disorders, including dystonia, chorea, asterixis, and hypokinetic movement disorders such as vascular Parkinsonism. [7]. Vascular parkinsonism has been considered a nonresponder or poorly responsive to levodopa treatment . However, a modest observational clinical trial performed in seventeen older patients with vascular parkinsonism, documented that L-dopa treatment (mean dose 450 mg/day, range 100–1000 mg/day) induced an excellent response in three patients, a good response in nine, and a moderate improvement in two patients during the first year, while three patients showed no response to L-dopa doses of 300–400 mg/day. Reviewing literature data, Siniscalchi et al., documented that in patients with Parkinson's disease, levodopa treatment can induce an increasement in serum homocysteine levels.[8].

Currently, various therapies are mainly applied in the treatment for PD, including medication, surgery, rehabilitation, and psychotherapy, among which medication is the first choice. There are several kinds of antiparkinsonian drugs, such as anticholinergic agents, dopamine ago- nists, and levodopa . Madopar, containing two active ingredients called levodopa and benserazide, is one of the antiparkinsonian agents frequently used in PD to increase the levels of dopamine in the brain [9].

Myasthenia gravis (MG) is an autoimmune disease caused by a variety of complex mechanisms of action of specific antibodies to the postsynaptic membrane, leading to impairment of the function of the neuromuscular junction (NMJ) and neuromuscular transmission [10].

Extraocular muscles are often easily affected, and the initial symptoms of most patients are ptosis and diplopia. This condition is desig- nated as ocular myasthenia gravis (OMG). However, the majority of OMG patients (50– 80%) will develop weakness in other muscles, including the bulbar, proximal extremity, and even respiratory muscles, which can be life- threatening,giving rise to generalized MG (GMG), usually within 2 years of disease onset [11].

Pyridostigmine is a mainstay of therapy for OMG, typically being tried first in all patients who desire treatment beyond patching. The advantages of pyridostigmine are safety, variable dosing, and relative quickness in determining efficacy. Pyridostigmine typically is more effective for ptosis than diplopia [12].

Pyridostigmine is a quaternary amine parasympathomymetic which inhibits acetylcholinesterase for the treat- ment of various conditions such as myasthenia gravis [13].

Acetylcholine is degraded by acetylcholinesterase (AchE) via hydrolysis. Inhibition of acetylcholine by AchE inhibitors is caused by competitive binding to the enzyme, which leads to significantly slower hydrolysis of AchEI compared to acetylcholine, and thus to reversible blockage of the enzyme. The degradation of acetylcho- line is consecutively reduced, and there is an increase in acetylcho- line in the synaptic cleft, which in turn leads to an improvement in the neuromuscular signal transmission. The duration of the effect depends on the stability of the temporary binding (AchE–AchEI) . The AchE inhibitors used as the hydrophilic quaternary ammo- nium compounds do not cross the blood-brain barrier at the usual therapeutic dose, or only in very low concentrations, so that cen- tral nervous system side effects of these substances usually only occur in intoxication. [14]

Comorbid MG in PD has rarely been described in the literature. Olfactory dysfunction, sleep disorders, and dysphagia can occur in PD and MG. While there were no differences in initial symptom presentation in PD-MG versus PD alone, dysphagia was more common in the PD-MG group. Dysphagia alone or with ptosis (“apraxia of eyelid opening”) or diplopia may represent clues for suspecting comorbid MG in patients with PD [3].

2. Case Presentation

A 70 year old male patient.the patient came to the Dr. Soetomo hospital outpatient units of nerve, in Januari 2019. Patients present with a history of thrombotic stroke and Parkinson's disease..the patient complains that the two eyelids are difficult to open, heavy afternoon, since 4 years ago, heavy 3 months ago, dispnea. weakness of half limbs since 1998. tingling sensation. His vital signs were Blood Pressure 132/62 mmHg, Respiratory Rate 20 b/min, Heart Rate 84 b/min, GCS 456, Temperature 36.5^0C and pain. The routine blood of laboratorium investigation revealed as following: GDP 109 mg/dL (40-121 mg/dL), GD2PP 112 (40-121 mg/dL), HBA1C 5,3, S.Cr: 1,26 mg/dL (0-1.2 mg/dL), BUN: 5 mg/dL (7-18 mg/dL), Uric Acid 7 mg/dL (2,6-7,2 mg/dL), Triglycerida 94 mg/dL (30-150mg/dL), LDL 94 mg/dL (0-99mg/dL), HDL 85 mg/dL(40-60mg/dL), Fibrinogen 406 mg/dL(150-450mg/dL) Thorax CT scan using contrast does not show any mass in the right and left lungs of the mediastrum. EMG RNS Decrement 43.6% supports a Myasthenia Gravis. BOF examination gives the impression that there is no visible opaque stone along the urinary tract of lumbar spondylitis. Abdominal ultrasound examination suggests the liver / GB / Lien / Pancreas / Buli / Prostate does not show any abnormalities. In September 2019, the laboratory was checked again. The result was S.Cr: 2,37 mg/dL (0-1.2 mg/dL), BUN: 31 mg/dL (7-18 mg/dL), Na: 139 mEq/L (136-145 mEq/L), K: 4.8 mEq/L (3.5-5.1 mEq/L), Cl: 98 mEq/L (98-107 mEq/L), Uric Acid 5,8 mg/dL (2,6-7,2 mg/dL), Limfosit 20,8% (20,5-51,5 %), Monosit 10,1%(1,7-9,3 %), A diagnosis of myasthenia gravis (MG) was set. Every month (January to December 2019) Patients routinely go to Dr. Soetomo's outpatient hospital to control and obtain drugs. .Patients receive pyridostigmine 60 mg every 6 hours orally

(tablets). Vitamin C 50 mg every 12 hours orally (Tablets), Levodopa 100 mg and Benserazide 25 mg every 12 hours orally (Tablet), Clopidogrel 75 mg every 24 hours orally (tablets), Trihexylphenidil 1 mg every 12 hours orally (tablets), Vitamin B1 50 mg every 24 hours orally (tablets), Vitamin B6 10 mg every 24 hours orally (tablets), Vitamin B12 50 mcg every 24 hours orally (tablets).

3. Discussion

The fact that geriatric patients on average take more than four different drugs a day is the starting point of a manifold potential drug interaction.A general overview is difficult to establish owing to the great number of conceivable interactions.[15]

In this case, patients with a history of thromboli strokes since 1998. To maintain normal blood pressure, patients receive monotherapy antihypertensive (RAS Blocker) Irbesartan 150 mg once a day.. Patients were diagnosed with CKD in September 2019 with a serum creatinine value of 2.37 mg / dl. Therapeutic strategies for treatment of hypertension in CKD. RAS blockers are more effective at reducing albuminuria than other antihypertensive agents, and are recommended as part of the treatment strategy in hypertensive patients in the presence of microalbuminuria or proteinuria [16].

The patient was treated with clopidogrel 75 mg once a day. The patient's serum creatinine increases from May 2019. Clopidogrel selection is appropriate which is indicated for stroke prevention. Clopidogrel (75 mg) monotherapy is a reasonable option for secondary prevention of stroke in place of aspirin or combination aspirin/dipyridamole (Class IIa; Level of Evidence B). This recommendation also applies to patients who are allergic to aspirin. [17].

the patient was treated with madopar (levodopa 100 mg and benserazide 25 mg) twice daily. The dose for the treatment of parkinsonism is *Initial:* 100/25 mg 1-2 times/day, increase every 3-4 days until therapeutic effect; optimal dosage: 400/100 mg to 800/200 mg/day divided into 4-6 doses. [18]. The patient was also treated with Trihexylphenidil 1 mg, given twice a day. Anticholinergic per oral (Trihexyphenidyl; Orphenadrine) can be useful to manage tremor [19][20].

The patient was treated with mestinon (pyridostigmine 60 mg) four times a day. The drug did not respond from August 2019 to December 2019. Finally the dose was increased to six times a day. By reference is to start with 60 mg of pyridostigmine once a day, increasing the dose to as many as six to eight 60 mg pills once the patient notes what effect the first doses have [12].

4. Conclusion

PD and MG very rarely occur together. case report or a series of brief cases reported in the literature, it is very important not to miss the diagnosis of MG in patients with PD, because the treatment implications are very important and greatly influence the prognosis. More basic research needs to be done to understand the pathogenesis of both diseases, to provide more therapeutic options and possibly change the approach of the patient, whose quality of life is determined by these two neurological diseases, which have an increased impact on increasing disability.

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