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Review Article

The Sooner The Better; Case Reports of Rehabilitation in Parkinson's Disease Patients

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ABSTRACT

Parkinson's disease is the second most common neurodegenerative disease worldwide. There is a destruction of dopaminergic neurons in the substantia nigra. Main symptoms are bradykinesia, postural instability, resting tremor, and rigidity. In addition to the symptoms of the disease, the complications that arise also affect the lives of patients. In this study we wanted to share results of three cases who recieves rehabilitation with physical activities and emphasize the importance of early physiotherapy.

INTRODUCTION

Parkinson's Disease (PD) is is the second most common neurodegenerative disease worldwide and includes both motor and nonmotor symptoms [1]. PD is associated with loss of dopaminergic neurons in the substantia nigra and the presence of Lewy bodies [2]. The precise mechanism of neurodegeneration is unclear. Main motor symptoms are bradykinesia, postural instability, resting tremor, and rigidity. Bradykinesia is the clinical mark of disease and is an important important problem that affects the functionality of patients. It is accepted that non-motor symptoms are earlier disease manifestations and appear years before the first presence of motor symptoms [3]. Nonmotor symptoms normally include cognitive dysfunction, hyposmia, constipation, rapid eye movement sleep behavioral disorder (RBD), and mood disturbance. Orthostatic hypotension is reported to affect 30%–40% of PD patients and may induce hypo-perfusion of the brain to cause dizziness, visual disturbances and cognition impairment [4]. Also gastrointestinal symptoms, urinary disturbances, excessive sweating, salivary secretion and seborrheic keratosis are also common in PD patients [5]. Festinating or freezing gait, dystonia, mood changes, memory deficits, etc. are some other features that can cause functional limitation.

Physical Therapy (PT) in PD focuses on enhancing the function of the upper and lower extremities. In this study, the functional evaluation of three PD patients before and after physiotherapy was mentioned.

CASE 1

A 64-year-old male patient has a history of Parkinson's disease for 4 years. In neurological examination; 1+ bradykinesia in the right upper and lower extremities, can stand up from sitting without support, turns in 3.5 steps; There was slight anteflexion while walking, the step distance was narrow.

CASE 2

The 76-year-old female patient had been receiving treatment for Parkinson's disease for approximately 10 years. In neurological examination; 2+ bradykinesia and rigidity; she had postural instability, stood up with support from his knees, walked with significant anteflexion, and turned in 4.5 steps. The step gap was narrow.

CASE 3

The 73-year-old female patient had been followed for Parkinson's disease for 7 years. On neurological examination, there was significant bilateral 3+ rigidity and 2+ bradykinesia on the left upper and lower extremities. He could stand up with unilateral support, had mild postural instability, and walked in anteflexion. He was walking with small steps; He could turn in 4.5 steps.

All of the patients have received 6 months of physiotherapy. Their clinal assesment after physical therapy shown in the Table 1. We evaluated bradykinesia, rigidity,postural instability, gait, turning, walking, Berg Balance Score (BBS) and Geriatric Depression Scale (GDS) (short form).

Table 1: Clinical Assesment of Cases Before and After Physical Therapy.

	Case 1		Case 2		Case 3	
	BPT	APT	BPT	APT	BPT	APT
Bradykinesia	1	1	2	2	3	3
Rigidity	1	1	2	1	3	2
Postural Instability	1	0	1	0	2	1
Posture	1	0	2	0	2	1
Turning	3,5 step	2,5 step	4,5	3	4,5	3,5
Gait	1	0	1	0	2	1
BBS	38	43	23	40	21	39
GDS	10	6	8	5	11	5

BPT: Before Physical Therapy; APT: After Physical Therapy; BBS: Berg Balance Score ; GDS: Geriatric Depression Scale; Bradykinesia 1=Slowing or reduction in amplitude 2= Mild slowing and reduction in amplitude 3= Moderately impaired; Rigidity: 1= Slight, 2=Mild to moderate, 3= Marked; Postural instability 0= Normal, 1= Possible retropulsion, takes 2 steps back to correct balance, 2= Definite retropulsion, takes 3 or more steps, but recovers unaided; Posture: 0=Normal,1= Slightly stooped posture, 2= Moderately stooped; Gait= 0:None, 1= Walks slowly, short steps 2= Walks slowly, shuffles, no festination; BBS 0-20= High risk for falls, 21-40=Moderate risk for falls, 41-56=Low risk for falls; GDS A score > 5 points is suggestive of depression. A score ≥ 10 points is almost always indicative of depression.

DISCUSSION

Pharmacological therapies are primarily used for symptomatic control of PD. Although pharmacological treatment are mainly focuses to motor symptoms, patients mostly suffers from motor difficulties. Physical activity and exercise may provide low-cost and universally available aids for current PD therapies [5]. Therefore, studying the effects of physical activity and exercise on PD is important.

Studies have shown that physical exercise can help to delay the disease onset and slow the progression of PD (6,7). This information support that early start to PT is important for complications. Some of the trials indicated that physical activities with various intensities, improve motor symptoms of PD [7,8]. In our patients its not mentioned the intensities of activities, but results were in same direction with all three patients. Several large controlled clinical studies have shown that the continuous exercise can improve the performance of daily activities in the early stage of PD, such as bradykinesia, balance, and turning [7]. These informations give us a perspective to give a guidiance to patients and ceragivers for importance of physical activities regardless of intensity. Unlike the literature, our patient bradykinesia level did not change effectively. We explained this, non of the our patients was high stage PD and bradykinesia rates were below 2.

Slow turning and Freezing of Gait (FOG) are motor characteristics also increase the potential risk of falling down for PD patients [7] Falling down can cause more severe complications for patients and it creates a burden for caregivers. As we asked to our patients for falls, one of them mentioned that after PT she was able to walk with confident and she gave up her canes. Few studies have shown that at least 4 weeks training, gait performance is improved and the effect can last for at least 3 months [7]. Cheng et al. [6], found that the PD patients' turning performance was greatly improved as compared with the control group after 30-min specific exercise training for 4–6 weeks [6].

We saw improvement in motor functions of our patients and BDI was positivly correlated with this improvement. Exercise can improve motor impairment, cognitive functions and enhance quality of life. At this point directly and indirectly excersise can make effect the mood of patients.

As in the literature, we saw benefits of excersise in different

aspects. Not only medical therapies are crucial for PD patients, also PT is major key for treatment. Early start to PT can prevent secondary complications of the disease.

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