

PATIENT WITH PARKINSON'S DISEASE: CASE PRESENTATION

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Abstract: This is a case studied about a patient 82year old female with diagnostic of Parkinson disease for 12 years. She also was diagnosis with osteo-arthritis, depression and panic attack disorder and she also shows significant muscle atrophy in both lower extremities. Patient shows signs of sustained depression and mild consistent forgetfulness with partial recollection of events, occasionally requires help to do activities of daily living (ADL). She has tendency to for the last two month. Her goals are to be able to get up from a chair and from her bed without assistance. She wish also to ambulate better and decrease falls that it happened every week and fatigue. This study wish to know what is the best intervention to achieve patient goals and improve functional capacity decreasing risk of fall. In the evaluation of this case (strength muscle, function and posture) was used Berg scale and Timed up & go (TUG Test and MSL (Measurement of Length step) before and after 15 sessions. At the end of session 15 muscle strength in both quadricepses was 4+ / 5, hip extensors 4+ / 5, hip abductors 4+ / 5, foot dorsiflexors 4 / 5 , plantar flexors 4+ / 5. Transfer sit to stand from regular chair to minimal assistance to stand by assistance and TUG test improve to 17 seconds toward the 15 visit still needed assistance to initiate the test, before she couldn't do this transfer. The test of MSL increases to 20% of body height. Patient swing arms when ambulate even without cues. She reported no fall for 5 weeks at the time of the visit number 15, before she had any falls. Patient able to ambulate two block in the community without significant fatigue. Task oriented with techniques, motor imagery cognitive strategies and verbal cues, plus strengthening strategies may be effective intervention tools to treat patient with PD.

Key-words: Parkinson. Physical therapy. Fall.

PACIENTE COM DOENÇA DE PARKINSON: APRESENTAÇÃO DE CASO

Resumo: Trata-se de um estudo de caso sobre uma mulher 82 anos de idade paciente com diagnóstico de doença de Parkinson há 12 anos. Ela também apresenta quadro de osteo-artrite, depressão e transtorno de ataque de pânico e mostra atrofia muscular significativa em ambas as extremidades inferiores. Paciente tem esquecimentos leves com dificuldade parcial nas atividades de vida diária (AVD). Seus objetivos são ser capaz de se levantar da cadeira e da cama sem ajuda. Ela gostaria também de uma deambulação melhor e diminuir as quedas e fadiga ao esforço. Este estudo pretende saber qual é a melhor intervenção para atingir os objetivos da paciente em melhorar sua capacidade funcional e reduzir seu risco de queda. Na avaliação deste caso (função, força muscular e postura), foi utilizada a Escala de Berg e Timed Up & Go (TUG), antes e após 15 sessões. No final da sessão de 15 força muscular em ambos os quadriceps foi de 4 + / 5, extensores de quadril 4 + / 5, abdutores 4 + / 5, dorsiflexor do pé 4/5, flexores plantares 4 + / 5. A paciente já tornou-se capaz de se levantar da cadeira e da cama sem auxílio e TUG chegou a 17 segundos após o tratamento, um bom resultado pois menos de 20 segundos para realização do teste corresponde a um baixo risco para quedas. No início do tratamento ainda necessitava de apoio para iniciar o teste. O teste de medida do comprimento do passo aumentou 20% da altura do corpo. Paciente apresentou braços oscilantes quando deambulava mesmo sem sinalização. Ela relatou ausência de quedas durante 5 semanas no momento da ultima visita e foi capaz de deambular dois quarteirões sem fadiga significativa. O uso de técnicas de tarefas orientadas, estratégias cognitivas e motoras de imagens não-verbais, além de estratégias de fortalecimento foram instrumentos de intervenção podem ser eficazes, neste caso, para tratar paciente doença de Parkinson.

Palavras-chaves: Doença de Parkinson. Fisioterapia. Quedas.

1. INTRODUCTION

The following patient is a 82 year old female with diagnostic of Parkinson disease (PD) for the last 12 years. She is married and currently living with his 86 year old husband in a single ranch home in the country side of the city of Ypsilanti, Michigan. She also was diagnosis with osteo-arthritis, depression and panic attack disorder. She was treated for skin cancer in 1995. She is 5.4 tall and weights 165 pounds; she also shows significant muscle atrophy in both lower extremities. Patient shows signs of sustained depression and mild consistent forgetfulness with partial recollection of events. No significant problem with her speech or swallowing. Moderately slow and small hand writing, but words are legible; she also can cut most foods, although clumsy and slow, occasionally requires help. Patient requires occasional assistance with dressing, putting on her socks and shoes and Buttoning. She needs help to shower or bathe and is very slow in hygienic care. Patient has tendency to fall occasionally for the last two month (less than once a week).

Her goals are to be able to get up from a chair and from her bed without assistance: "it is too hard on my husband", she stated. She wish also to ambulate better and decrease falls and fatigue.

Up 60 % of persons with Parkinson's disease experience fall and some of this group fall twice a week. Persons with PD are 5 times more likely to suffer related injuries for fall than healthy older adults, probably because they have balance deficit.^{1,2,3}

Balance deficit in individuals with Parkinson's disease, although not well understood, have been attributed in part to neuro-transmitters disturbances between basal ganglia and other motor centers such as the supplementary motor cortex and the portion of the brain stem responsible of maintain the upright stance^{3,5}.

- Task oriented practice, motor imagery plus the application of external cues and cognitive strategies trigger the initiation of motor acts resulting in motor skill acquisition^{6,7}
- Practice of specific functions and practice of task, combine with mental imagery lead to improve the performance of functional task^{8,9}.
- The aim of this study is to know which would be the best intervention to achieve the patient goals and to improve the functional capacity, decreasing risk of fall.

■ 2. METHODS:

2.1. Evaluation:

She shows decrease of muscle strength in both upper and lower extremities: bilateral quadriceps to 3+/5, hip flexor in both sides to 3/5; hip extensors in both lower extremities to 3/5, hip abductors to 3+/5; foot dorsal-flexor bilaterally to 3/5, plantar flexors to 3+/5. She ambulates with moderate difficulty but does not require assistance: short steps, does not swing arms and a tendency to drag his legs and occasionally signs of freezing and start hesitation. The patient shows minimal to moderate hypomimia, no tremor at rest or during action is present, moderate impaired during finger taps and hand movements (open and close and pronation and supination in both hands). She demonstrated significant bradykinesia: when asked to tap heel on the ground in a rapid succession picking up the entire leg. Patient is unable to get up from a chair or bed without help.

Posture, slightly stooped and significant, forward head posture.

Patient shows absence of postural responds to sudden posterior displacement, (produced by pulling on shoulder when patient is erect with eyes open and feet slightly apart, she would fall if not caught by the examiner).

She scores 20 in the Berg Scale², showing major problem with transfers, balance and circular ambulation.

TUG¹ test was given to her, scoring 28 seconds.

She scores less the 15% of body height in forward and lateral motions.

The patient shows significant stride variability and unable to maintain a steady gait rhythm, that shows a decrease in automaticity damaging locomotors synergies¹⁰.

■ 3. ASSESMENT /INTERVENTION

The patient main problems are transfers, ambulation, risk of fall and balance, she is less dependent in ADL, grooming and feeding.

Task oriented practice and motor imagery variables, will be used to manipulate ambulation, balance and risk of fall, through physical therapy intervention.

Once the primarily automatic and well learned function of balance is compromised, practice of the impaired task may be employed to compensate for motor deficiencies that result in balance deficits.

Practice of the task of ambulation and balance efficiency are important to decrease risk of fall. The main concern of the patient was falling and improving ambulation.

Practice of the task, to stimulate the patient toward the goal, of enhance motor acquisition will be the system of choice.

Specific task practice combined with MI will be use because have been prove be more effective in the treatment of motor deficit than only conventional physical therapy treatment ^{11,12,13}.

Motor imagery will be to create in the patient a better corporal image of walking, increase length steps and improve gait rhythm.

The motor imagery is crucial to stimulate the internal implicit action that the patient has, is like putting the patient in from of a mirror. It have used the imagery of a motor act in an attempt to learn and improve motor skills and outcomes, in this case improve ambulation and balance ¹³.

Decrease fall was very important, beyond the acute trauma that they may cause; falls may lead to fear of falling with self imposed restrictions in activities of daily living³.

Since the first session, patient underwent an intense gait re-education program during first and second visit patient received training in the parallel bars to bill the level of confidence and security. Under intense verbal cues and pacing to increase length step and decrease stride variability patient was encouraged to ambulate without hand support in the parallel bars.

After the third session the process of gait re-education continued outside of the parallel bars in an open space. External imagery was use showing the patient the model to execute (PT or PTA execute the movement first) and internal imagery recalling the sensory experience of the task performed ^{4,5}.

The instruction for imagery training required the accurate description of the motor task, in this way the imagery performance could be use to enhance the real performance of the same task ⁶

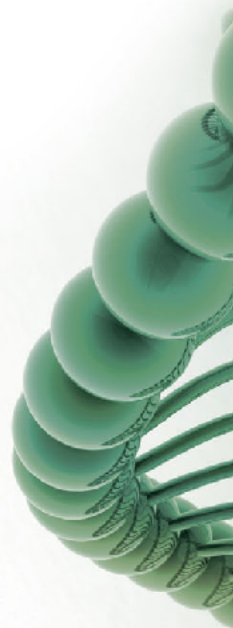
Speed was gradually increased according with patient tolerance and safety; time on the treadmill was also increase from 2 minute at session to 6 minutes session .

Balance task oriented activities were performing for the patient in standing position. The task consisted in moving her center of gravity to two visual targets marked in the floor on his sides and on the front. Patient has to step toward the side and forward and reach the target with his foot maintaining a stationary support, external imagery was use by the therapist performing the movement first or in the same time, and asking the patient to imitate the task.

Bicycle exercises were prescribed to increase flexibility and strength but also to stimulate rhythmicity ².

As mentioned before due to the roll of strength in maintain balance and posture, strengthening exercise were part of the treatment specially quadriceps and hip extensors.

Home exercise program consisted in strengthening exercises, quad in sitting with 2lb weight, straight leg exercises, hip abduction in supine, ankle strategies exercises. At the time of session 10 caregiver was trained to perform task oriented transfer sit to stand with verbal cues.



■ 4. RESULTS

- At the end of session 15 MS strength in both quadricepses was 4+/ 5, hip extensors 4+/5, hip abductors 4+/5, foot dorsiflexors 4/5 , plantar flexors 4+/5
- Transfer sit to stand from regular chair to minimal assistance to stand by assistance.
- TUG test improve to 17 seconds toward the 15 visit still needed assistance to initiate the test.
- MSL increase to 20% of body height
- Patient swing arms when ambulate even without cues
- Patient reported no fall for 5 weeks at the time of the visit 15.
- After 10 visits, the patient clearly showed an increase of approximately 20% in length step, and consistently swung his arm.
- Patient able to ambulate two block in the community with out significant fatigue
- Patient reported no fall for the last 3 weeks. In the eleventh day of treatment patient continue gait training on the treadmill, following his own pace and with intense verbal cues and enhance of the function to internal imagery.
- Patient also perform stepping activities with different step highs advancing from two hand support to no hand support to the last session reaching 12 inches step.

■ 5. CONCLUSION

Task oriented techniques, motor imagery cognitive strategies and verbal cues, plus strengthening strategies may be an effective intervention tools to treat patient with PD.

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