



Case Report

Functional Rehabilitation of a Patient with Post Stroke Cerebellar Cognitive Affective Syndrome - A Single Case Study

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ABSTRACT

Objective: In the last decade, it has become more evident that cerebellum plays a major role in cognitive, behavioral and affective abnormalities. In this case study, we report about a client who developed “Cerebellar Cognitive Affective Syndrome” following a cerebellar hemorrhage and the rehabilitation process following the same.

Design: A single case study.

Methods: The patient was a 31 years old male, who was working as an executive manager was referred to Occupational Therapy Dept. for evaluation and rehabilitation. The patient showed ataxia of the trunk and the extremities as a part of motor evaluation. In cognitive evaluation, MMSE a screening tool and LOTCA, standardized cognitive assessment in occupational therapy was carried out and the results revealed disturbance in orientation, attention, memory-both short term & long term and impairments in executive functioning, visuo-spatial functioning. Behavioral and affective abnormalities also noted during evaluation. Due to impairments in cognitive, motor, behavioral and affective components the client was totally dependent on his family members for his Basic Activities of Daily Living. Cognitive rehabilitation, Functional balance retraining, fall prevention education, caregiver education and home modifications were carried out in order to make the client independent in his daily living tasks and also to maximize his abilities to return to his work.

Key words: cerebellar cognitive affective syndrome, balance retraining, cognitive rehabilitation, Functional rehabilitation.

INTRODUCTION

It is well established that cerebellum not only plays a major role in co-ordination of movements but also in cognition, affect and behavioral functions. In Cerebellar Cognitive Affective Syndrome, in addition to motor deficits, the presence of cognitive

impairments in executive functions such as planning, verbal fluency, abstract reasoning and working memory, personality changes with blunting of affect or disinhibited and inappropriate behavior, language deficits like agrammatism and dysprosodia is evident^[1] Hence rehabilitation in cerebellar

lesions should focus on motor as well as cognitive and behavioral functions and associated deficits in order to make clients functionally independent. In this case study we report about a client with cerebellar cognitive affective syndrome and the rehabilitation process following the same in order to make the client functionally independent.

CASE REPORT

A case of 31 years old male was diagnosed with Right cerebellar infarct - Cerebellar cognitive affective syndrome was referred to occupational therapy for evaluation and management. As expected problems in relation to cerebellum, the client has ataxia of trunk, and extremities. Initial cognitive screening was done with Mini Mental Status Examination and the results revealed a moderate to severe cognitive deficit. In cognitive evaluation, client presented with Disorientation to time, place and person, naming difficulty, memory affected- short term memory, long term memory attention – immediate digit span test –intact, attention span was 5 min to max 10 min. right left confusion, visuospatial relation affected, difficulty in answering logic questions, behavioral changes – over familiarity, never bothered about surroundings and people around, constant cues and assistance required to perform even his basic daily living activities. Higher cognitive function – imagination and creativity, decision making, problem solving, judgment – impaired.

Activities of Daily living evaluation and Home evaluation was carried out which revealed that client was totally dependent for his daily living skills due to his ataxic features and cognitive behavioral deficits and existence of architectural barriers at home which may pose as a risk for falls due to his ataxic gait.

A job analysis was also carried out to the client who was working as an executive manager in a shopping mall pre-morbidly which revealed the requirement of higher cognitive skills, social and interpersonal skills and physical demands of standing, walking to one place to another, climbing steps as a part of his routine job. Based on ADL evaluation, Home evaluation and job analysis, cognitive rehabilitation, Functional balance retraining, falls prevention education and caregiver education were provided in order to maximize client's abilities to perform his daily living skills and job skills safely and independently.

Cognitive rehabilitation:

As the client was an Executive manager by occupation, cognitive demand of attention, planning and organization, working memory, and other executive functions were required to perform his job successfully. Cognitive evaluation using LOTCA –was carried out to know about the initial status of cognitive functions. Cognitive rehabilitation focused on those cognitive skills through paper pencil tasks, computer related activities, real life situations involving cognitive skills. Cognitive rehabilitation on initial phase focused on primary cognitive abilities – orientation, attention and memory aspects. Orientation to place, person and time were provided in a daily basis. Attention – with four levels were involved for rehabilitation. Sustained, selective, divided, alternative attention all were considered in therapy sessions as it is a requirement for a skilled professional. Memory training for both short term and long term were initiated. As the patient progressed in primary cognitive skills, higher level cognitive skills were initiated. Over the course of cognitive rehabilitation, the client became partially independent in basic self-care tasks which he was dependent before. Family members

at home were taught to how to facilitate those existing skills rather than making him dependent on cognitive skills. Common issue was in memory where family members were taught to use clues or cues in order to facilitate the cognitive process as part of cognitive rehabilitation. Family members and significant others were also taught on how to behave with client at various circumstances with behavior and affective issues. The client was provided with rehabilitation for more than 2 months with the overall goal of making him independent as much as possible. Currently the client level of functioning is improved in terms of cognitive, behavioral and balance and he was independent in his basic activities of daily living and indoor mobility and outdoor mobility with supervision.

Functional Balance retraining and Fall prevention education:

Functional balance retraining is required to improve balance in order to perform safely and independently the tasks of sitting, standing and functional walking in indoor such as going to bathroom, ground floor to first floor etc. This can be achieved through rehearsal of tasks like reaching out for objects while maintaining the body straight, initially within reach and progress to complex reach which demands high level of balance. Similarly other tasks to improve balance like standing on foam, walking in a narrow pathway or on a balance beam, walking in a straight line, standing with narrow base of support and playing a simple throw and catch games. All these activities were graded from simple to complex, higher levels as the client progresses, till he can independently manage daily skills which require balance.

Fall prevention education is highly recommended at initial phase in order to prevent a fall due to poor balance. Caregiver education was provided regarding the risk of falls, places commonly falls can happen

such as in bathroom, threshold at doors, slippery floor, and other factors influencing falls such as poor illumination, risk taking behaviors by client such as moving alone without anyone's supervision, rushing out to attend phone call etc. Home modifications were suggested and carried out to provide safety such as grab bars installation at bathroom/toilets, raised toilet seat, non-slip mat at slippery floors, and removal of threshold at doorways.

DISCUSSION

Many a times in cerebellar infarct cases, only routine motor evaluation and rehabilitation is carried out and cognitive evaluation and rehabilitation is missed out. Even if rehabilitation is carried out, many a times it may not be focused on end-target as Independent living skills in home and in community. Hence In cases with cerebellar involvement, not only motor evaluation but also cognitive screening and detailed cognitive and behavioral evaluation and their impact on daily living skills and job skills is highly recommended in addition to neuropsychological testing as there can be severe cognitive deficits to subtle cognitive deficits which may go up without being addressed. Cognitive rehabilitation is required till the patient is able to resume normal functions on his daily living skills and also his vocational aspects as per the requirements of job.

CONCLUSION

Cognitive dysfunction in cerebellar lesion cases occurs may be due to its connection pathways with cerebrum. Hence in cerebellar infarct cases, cognitive evaluation and rehabilitation should be carried out as a routine process in addition to the motor function in order to make the client functionally independent.

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