

Cognitive Rehabilitation Perspective

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CASE REPORT

ABSTRACT

This paper presents perspective on cognitive rehabilitation in the patient who was in receipt of rehabilitation management after surgical treatment for aneurysmal subarachnoid haemorrhage (aSAH). Aneurysmal subarachnoid haemorrhage (aSAH) refers to bleeding in the middle of the brain and tissue covering the head. It is a medical emergency. The severe cure of aSAH is prominent but less is identified about the enduring repercussions of aSAH on mental and daily life. It is a serious neurological condition. Besides its physical effects on the body, it also affects the cognitive and neuropsychological functions of a person. In this study, we try to understand the effects of cognitive rehabilitation in aSAH patient. An Indian male of 50 years was referred to neuropsychology Outpatient Department (OPD) after the conservative management where his first neuropsychological evaluation took place, and his scores were recorded. The effects of cognitive rehabilitation were further studied through evaluation. It was found that rehabilitation has a positive effect on the patient and leads to an improvement in his cognition.

Keywords: Cognitive rehabilitation, aneurysmal subarachnoid haemorrhage (aSAH), neuropsychology.

INTRODUCTION

Aneurysmal subarachnoid haemorrhage (aSAH) is a nervous system related disorder which represents a relatively small percentage of all stroke cases (5-7%), however, its mortality and morbidity rates are among the highest,¹. Studies have shown that 15-20% of the patients die before reaching the hospital, and another 20-25% die within the first 48 hours,^{2,3}. The 30-day mortality is as high as 50%. There have been advances in surgical procedure, pharmaceuticals' usage, and severe care, due to which the global mortality is decreasing every year (0.9%) over the previous 2 decades,⁴. In spite of this, the long-term outcome is still poor, with 30% of the survivors remaining dependent on others,⁵. The consequences of the pathogenesis mechanisms after aSAH is crucial and dispersed intracranial injury may also manifest owing to ischemia befalling either through the early

hemorrhage, as a result of macro- and micro-vascular malfunctions, or due to delayed cerebral ischemia (DCI),⁵. The amalgamation of crucial and dispersed intracranial injury produces cognitive dysfunctions and/or pivotal neurological impairments. Most frequently impaired cognitive functions after aSAH are memory, executive function, and language. This strongly implicates temporal (hippocampal) and frontal lobe dysfunction. Cognitive difficulties including attention, planning, and reasoning impairment after aSAH affect the patient's ability to return to work,⁶. The neurological deficits, such as hemiparesis or monoparesis, affect activities of daily living. Though the death rate has been deteriorating within last 3 decades, the incapacity after aSAH continues to be significant. The figuring out issue of final results is clinical grade, age, the quantity of aSAH and length of an aneurysm. Both neuro-physical shortfalls and neuropsychological dysfunctions are sequel afterward aSAH. Due to the more modern diagnostic strategies and remedy techniques within the last 3 decades were evolved for sufferers having aneurysmal subarachnoid haemorrhage (aSAH), main to a lower within side the fatality of instances via way of means of 0.6% each year. The rate of the case fatalities in aSAH continues to be being pronounced every year among 8.3 and 66.7% with what sufferers are demise particularly as an impact of the preliminary bleed or its instant complications because of immoderate bleeding. Thus, aSAH stays an ailment which convey a mortality of 12% prior to getting clinical consideration, an extra death rate of 40% in 1 month of hospitalization. Several reviews from India^{7,8,9} have provided approximately the outcomes after surgical clipping or coiling of aneurysms, however a limited reviews give the general final results of sufferers with aSAH. The early cognitive rehabilitation has shown the significantly better functional and cognitive performance in the persons having aSAH than those who did not receive any cognitive rehabilitation,¹⁰. Earlier studies are reporting that patient did receive the rehabilitation for the minimum 45 days after stroke.

The second trial of the above case, is based on a long-term follow up of average 28 months. There were 32/80 participants' patients who had received in-patient rehabilitation treatment. There was no difference between the 32 out of original 80 subjects on demographic or clinical criteria. Functional Independence Measure (FIM), 18 items ordinal scale is used to measure self-care, transfers, sphincter control, locomotion, social cognition and communication independent performance. Total FIM scores had shown significant improvement between discharge from hospital and follow up. Most of the subjects were independently functioning physically. However, approximately, almost 40 subjects had kept score in the cognitive damaged array on tests. Approximately 40-50 subjects needed assistance with common daily ordinary deeds and no one out of them could returned for work full time. Demographic or clinical description of aSAH inception did not influence any functional or cognitive outcome. There is damage of cognition and memory revival after subarachnoid haemorrhage where they did the rehabilitation program and re-assessed the patients after 12 months and research concluded that patient remained having the difficulty in memory, mental flexibility and psychomotor speed and visuo-spatial construction,¹¹.

Case Report

Patient was a 50 years old, Indian male predominantly running a business firm from past 20 years, He was referred to neuropsychology OPD after the conservative management where his first neuropsychological evaluation took place. The evaluation procedure comprised of all important clinical data, the functional independence measure (FIM), Auditory Verbal learning test (AVLT), the mini mental state examination (MMSE), the Montreal Cognitive Assessment (MoCA), and Controlled Oral Word Association Test (CoWA). The assessments applied in this study enclosed main areas of cognitive impairments seen in patient with aSAH matched according to age, gender, and level of education. Rehabilitation plan was executed with the above-mentioned scores where

patient was being assigned the task and was being called for the follow up session in the OPD to introduce to the next plans for the better executive functioning. At the first phase rehabilitation begun with attention and concentration task, where patient was assigned to pace random task where was assigned with papers with random numbers written on it and patient was expected to count the random numbers, categorization was the second task introduced to him where few categories (e.g. tree, transport) assigned to with jumbled words within a time limit (e.g. within the time of 30 seconds, (later increased) patient has to put given names in various categories). These exercises were carried for 2 weeks and later grain sorting exercise was introduced which initially begun with large to small sized grains. For immediate memory rehabilitation family was instructed to show him recent television show and newspaper, switch patient from the sight and ask him to recall, this exercise recently begun with cue's where patient was given cues before beginning and gradually without cues exercise were being followed. Executive functioning was also a part of rehabilitation therapy which begun with grain sorting exercise moves a maze puzzle later added in the protocol with self-questioning exercise where patient was instructed to read a particular phrase or paragraph and someone will ask question based out of it. These all exercises were being regularly followed at clinical set- up and later on at home. Meanwhile with the vision of sending patient back to work life so family was advised to send patient to the workplace may be for few hours with the official permission, to bring acquaintance to workplace and working environment. After the repeated exercises at home and workplace patient was called for re-evaluation where after first phase, visibly likeable progress was seen in route recall, immediate memory, identification, categorization and confidence. Scores after first phase was improved on MMSE, MoCA with AVLT and COWA. During the second phase patient was able to adapt with working environment as he started to work for the half day almost every day, route recall was improved. As the patient was fond of cooking so, recipe and picture sequencing exercises was given to him, alternatively, patient was asked for the various recipes of the dishes he used to like and later few jumbled pictures were being given to construct a picture out of it which later lead to sentence sequencing and shape matching. Since executive functioning found to be getting better on each step of task organizing. Task and few different exercise (e.g. reading and comprehend) were assigned to him with in time limit to improve speed, decision making, and attention. For better attention exercises patient was introduce to reverse counting, alphabet addition, paced random numbers with musical sounds at the back, category targeting, number blocks and finding odd even numbers. For immediate memory patient was introduced to word list and card matching with verbal pair association. He was asked to keep the daily record of the staff and family members coming at home and office, and to maintain a record of all activities.

CONCLUSION

There are many studies available where patients with aneurysmal subarachnoid haemorrhage were assessed on neuropsychological test to assess their cognitive efficiencies after every fixed time period of 3-6-12 months. The positive outcomes and better results while doing constant cognitive rehabilitation with the patients,¹². Cognitive rehabilitation is not actively being advised in India even after any kind of brain stroke and the evidence-based research where the significance of cognitive rehabilitation is being shown in aSAH. There is support from the researches held on aSAH in the perspective of cognitive neuropsychology and which conclude that few patients continued to have difficulty even after 2-3 years of stroke, whereas this research supports to cognitive rehabilitation after aSAH for better outcome in instrumental day today *activities*,¹³. The patients with aSAH had a significant neurological impairment at follow-up, even though the impairment was only mild-to-moderate,¹⁴. There was a significant correlation of neurological

impairment, with the functional outcome which indicates that neurological impairment is a significant determinant of functional outcome. Aneurysmal Subarachnoid Haemorrhage (aSAH) is a serious condition that can impair one's cognitive functioning. Present study is evidence-based research to support cognitive rehabilitation after aSAH. On the basis of the study, it has been found that cognitive rehabilitation has been found to improve the overall cognitive functioning i.e., execution and immediate memory of an individual and is recommended for those who have suffered a stroke for their well-being. Initial rehabilitation later aSAH recovers not only physical aspects but also mental and daily functioning,¹⁵.

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