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Neuropsychological Rehabilitation of Severe Alcoholic: A Case Study

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Mini Review

KS, a 36 year old male who had completed his Engineering degree and web designing course was referred for neuropsychological rehabilitation with chief complaints of excessive alcohol intake for over 10 years and withdrawal of 6 months which lead to poor attention and loss of memory, difficulty learning new information and inability for immediate recall, and remembrance for recent events, lack of interest in daily activities, self – neglect and sadness of mood, severe difficulty in maintaining gross and fine motor skills, inability to walk or balance during movements. He required constant support for conducting daily activities and to maintain self-hygiene.

He was apparently alright 6 months back until his father and close relatives identified symptoms of chronic alcoholism when he fell down in a railway station and later after reaching home, when he manifested symptoms of feeling anxiety tired and breathing difficulty. He was admitted in a hospital immediately and it was found that the blood pressure was extremely low (24) and hemoglobin was 5. The doctors after conducting tests suspected liver cirrhosis and since the hospital was not fully equipped, the client was shifted to another hospital. In another hospital, it was found that liver was still in functioning condition and he was referred to a neurologist who found that he has memory impairment; nutritional deficit due to severe alcoholism, B_{12} deficiency and the blood supply was less to his brain. He was then referred by the neurologist to undergo neuro-cognitive rehabilitation. The persistent and pervasive mood of the client was irritable, lack of motivation, comprehension and he did not feel like engaging in any work involving social setting or situations. His interpersonal relationship with family members, relatives and friends deteriorated gradually. Client also reported sadness of mood, death wish, and low self-confidence. The client's role functioning, sleep, sexual functions and appetite were disturbed.

Past Medical & Psychiatric History

No significant past medical and psychiatric history could be elicited. Due to the drinking behavior of the client, motor accidents happened twice in Mumbai but not very serious to be hospitalized. History also suggests that client used to attend de-addiction camps and attended session in Alcohol Anonymous for 10-12 days in Baroda on doctor's advice but none of the treatment programs showed improvement in him. Later, in October 2013 he was admitted twice in two different hospitals due to the present illness. The client was taking medicines from the hospital in Mumbai (8 months) and was under occupational therapy and computerized neuro-cognitive retraining.

Tests Administered

SPM

The total score on intelligence test was 39, percentile slightly higher than 25th percentile leading to Grade III- suggesting that the client has average level of intelligence.

Alcohol Dependence Scale

The total score on this was 40 suggesting chronic alcoholism-a state of dependence.

NIMHANS Verbal Learning and Memory Functions Test (VBLMF)

During repetition of 19-20 units' sentences, his immediate recall in repeated presentations are 3,5,12 units, and delayed (10

minutes later) score is 3 for the first sentence and 2, 3, 5 units and 1 for delayed recall, for the first passage. For the second passage the same scores are 2,3,5, and [1].

NIMHANS Visual Learning and Memory Functions Test (VSLMF)

In visual recall of Complex Figure (with 23 units of visual information) shown for 15 secs, his scores of reproductions from immediate recalls are 3, 4, 5, and delayed (10 minutes) score of 5, whereas copying the same figure in the 5th trial, his score is 22.

Patient's Status Since the beginning of Neuropsychological rehabilitation, using computerized neurocognitive retraining

Mr. KS was bought to Institute of Behavioral Science, Gujarat Forensic Sciences University, Gandhinagar, after initial de-addiction treatment program for acute alcohol addiction. It was noticed that he had become addicted to alcohol during his college days and suffered from acute neuropsychiatric symptoms and he had lost complete interest in daily activities of life, self-discipline, education and suffered from acute memory (front-temporal type as per the descriptions given by his father) disturbances. After examination, he was found to be completely inattentive to any questions, and questions have to be repeated to get a response from him. Though he could read and write, it was not possible to make him do any of these tasks even during psychological testing. He used to get agitated when he has to carry out something difficult and would get up and walk away. He answered mostly in monosyllables to questions, though he used to engage in short conversations with his father. He was generally obedient to his father, because of which he could be made to carry out routines of daily life. Emotional agitation was easily triggered in him, when others instructed him to carry out any act [2-6].

On the Verbal and Visual Learning and Memory assessment tests of NIMHANS Neuropsychological battery of tests, he was seen to totally unable to reproduce short sentences, even after repeated presentations. There was no indication of knowing that he had listened to a sentence or conversation, a few minute after listening to it (Wernicke-Korsakoff amnesia). Had little recall about his past and problems with recent memory. He was unable to recall the name of therapist and helper, though he was often presented with these names.

He was introduced to Brain Function Therapy – continuously supervised computerized cognitive retraining program. Started with recognition of single digit numbers and alphabets, which was very difficult for the patient. Initially he was quick in recognition but because of his restricted movements and lack of eye contact, he used therapist's help to press the keyboard for responding. He required support to walk, sit and get-up. He was also, stubborn and non-corporative. After a few weeks of regular training, he was able to recognize and report correctly three-digit numbers and words with 3 alphabets, though each recognition took several minutes in many cases. Continuous efforts for a period of three months brought about significant improvement. Word recognition task was done quickly by him, but required therapist help to press the keyboard. After few sessions he was eager to take initiative to press the keyboard by his own without any help. Working memory was the most difficult task for him. He improved significantly and started showing interest in the cognitive tasks and his achievements. Neurofeedback sessions were also given for two months. There was no alpha rhythm in his EEG. He was gradually learning to improve his theta activity and occasional presence of alpha is currently seen. His P1 activity in ERP tests using auditory stimuli, occasionally carried, has been showing gradually increasing amplitude, indicating improved sensory registration. Severe alcohol dependence causes neuro-cognitive disabilities which were retrieved through Brain Function Therapy and Neurofeedback techniques. These techniques can be used on larger population as cognitive retraining program.

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