

Rehabilitation Strategies in Patients with Spinal Cord Injuries

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ABSTRACT

The setting of rehabilitation for patients with spinal cord injured is promising environment. Attending the new strategies is useful to promote the treatment and the patient's ability. This method has a huge challenge for patients encountered with cognitive impairment. Patient education and skills at the rehabilitation center can be a challenging endeavor. By rehabilitation, patients suddenly evolve and they have to enhance the cognitive capacity to survive environmental changes face dramatic. These proceedings help the independence, self-esteem of the patients and help them cope with illness and life.

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INTRODUCTION

Cognitive impairment in patients with SCI

Sustained spinal cord injury (SCI) is a traumatic experience from the physical and psychological view points. People with SCI often face with a permanent, obvious and necessary change. The consolidation impact of physical therapy for most people with SCI to take serious steps to learn and practice hard and complete countless skills that they need in their everyday life will be transferred to the rehabilitation setting that is under supervision.

These patients will be faced with many challenges in rehabilitation processes and deficiencies associated with the accident^{1,2} and some of the cognitive impairments may occur during rehabilitation. Research has shown that social problems affect on patients with SCI complications^{3,4}.

People with dual diagnosis of SCI and concomitant cognitive impairment require complex rehabilitation programs. Mild cognitive impairment in these patients includes problems with attention, concentration of memory and problem solving, logic and learning new things and cognitive skills at high levels. Any brain injury

may be due to displacement or delay in learning the skills rehabilitation⁵. Early diagnosis of double traumatic brain injury (TBI) and SCI is important for rehabilitation and increase further action compared to SCI alone. The connection between TBI and overall response to the rehabilitation SCI may be assumed more complex than the clinical status.

The cognitive impairment in these patients will create problems in terms of skills of the rehabilitation, so the importance of the assessment and treatment of cognitive impairment in these patients is emphasized. Correct diagnosis and treatment of cognitive impairment may have unpleasant reactions that reduce the medical staff. A closed head injury may increase the impulsive behavior, poor judgment, and the increase of violence in patients; therefore employees face with difficulties to control them. These behaviors are associated with the reduction of the ability to learn new information and cognitive impairment. Rehabilitation staff behavior may be combined with unwillingness and violent. And this inadvertently affects the care and rehabilitation weakens the possibility of success in any way.

The causes of cognitive impairment in patients with SCI

In the rehabilitation professionals (RP) of these patients cognitive barriers must be detected to understand and complete of new skills using a comprehensive and detailed neurological evaluation^{5,6}. It can be concluded that CRP may be appropriate in order to optimize the rehabilitation experience with the capabilities of each person. Moreover, in order to assess and identify the features and strengths of RP, this method can help patients in their innate skills and abilities to moderate cognitive impairment of them and improves cognitive functions and their relationship with society⁷.

Cognitive disorders are different based on age and cause of SCI. Fall is the most common cause of injury in people 45 years old and above. Sports-related injuries among different age groups. Also cognitive disorders are different based on sex and cause of SCI. In this process, in general, the causes are different in both genders and ethnicity. Most people with SCI are men⁷. Among women with this problem the reason is because of the traffic accidents, falls, violence and sports events⁸. The medical and surgical problems increased the dramatic effects of cognitive impairment in women. Race and ethnicity affect the etiology and this can contribute to cognitive impairment^{7,8}. Etiology has a major role in the incidence and prevalence of cognitive impairment. Injuries resulting from road accidents, some types of violence and sports events is a result of rapid acceleration - deceleration. Such events are often powerful enough to be leading to brain injury⁹. Motor vehicle accidents brain damage that is associated with a high rate of speed and in slow speed damage occurs.

Assessments for cognitive impairment in patients with SCI

Unfortunately, due to the severity of the initial problems, mild to moderate traumatic brain injury may be overlooked in the initial assessment^{10,11}. Researchers at the rate of post traumatic amnesia (PTA), which in the first stage is accompanied with confusion and indicates brain injury after the accident. Independent of any medical assessment, brain injury may be clinically significant, Evaluation reports of loss of consciousness (LOC) in the beginning are important. LOC is the only severity of the disability variable that is significantly associated with the ability to solve social problems of cognitive domains¹². The need to evaluate the cognitive impairments associated with brain injury as soon as it is possible in terms of practical medical treatments.

People whose test shown alcohol in their blood was found to be more likely to incur damage¹³. In general, the results of rehabilitation for people with drinking patterns before the damage is weak, some reports on the rehabilitation activities of the limited partnership in those with a history of drinking is presented¹⁴. The researchers believe that limited participation in rehabilitation may lead to discharging of patients that their cognitive impairment may not have been the cause of their personal and social abilities and in the future are in crisis and at the risk of medical harm. Histories of alcohol abuse in secondary medical side effects are involved in the foreseeable¹⁵. Research has shown that the amount of pressure is detected among patients with acute rehabilitation during the first three years is more than those who abuse alcohol before starting¹⁵. In rehabilitation we should be aware of the negative cognitive effects that can be caused by chronic alcohol abuse as well as the immediate and significant neurological effects of alcohol. Significant research investigated the role of chronic alcohol consumption on the perception¹⁶ examined the main types of neurological disorders specific and overall cognitive dysfunction related to very high alcohol consumption. Anterograde amnesia (inability to remember events that happened recently) in severe cases lead to brain damage and cognitive dysfunction is widespread. Obviously, anterograde amnesia and brain damage can profoundly affect learning and patients' skills. Apart from certain neurological disorders, the general cognitive deficits, reduced motor coordination, difficulty with abstract thinking, lack of attention and concentration, and visual and verbal memory loss may occur in patients¹⁷.

Higher cognitive processes such as planning, organizing, and adjusting behavior are also affected (Chronic alcoholic patients are at higher risk of head injury in car accidents and falls) Trauma to the brain may contribute to cognitive impairment subjects. A rehabilitation study has shown that people have memory impairment in the first three days. In connection with the impact of drug use on the results of rehabilitation, doctors should also consider a patient's history of drug use. More than 30 percent of people hospitalized had positive tests for drugs at the time of reception^{18,19}. Chronic use of drugs is linked with attention deficit, abstraction, memory, decision-making, and visuospatial ability¹⁷. The researchers also found that stimulants outperform addicted to cocaine intelligence test, and had worse situation than alcoholics, according to intelligence, attention, memory, and reaction time are. In addition, the experts pointed out those three months after the

initial evaluation, only memory test scores remain low. Memory disorder may result in chronic drug abuse. As a result, its investigation on injuries and the rehabilitation are essential. Poor cognitive ability may also be due to chronic use of the drug. Thus, both poor intellectual function and cognitive impairment associated with the use of medication may affect cognitive function in patients with SCI.

Patients with SCI who are struggling with substance abuse and the significant obstacles to successful rehabilitation encountered. According to the high prevalence of chronic drug and alcohol abuse to harm people and with respect to cognitive impairment that may result from both acute and permanent exit that leads to brain damage related to the use of proper assessment of the problems of drugs and alcohol is essential. The neurological comprehensive assessment of patients for their rehabilitation is needed to maximize success.

Traumatic brain injury at any time in a person's life may affect the cognitive abilities of the individual. Moderate to severe brain injuries, including repeated - can be permanent personality, cognitive, behavioral negative effects, especially when a head injury occurs in childhood. History of head trauma may be shown in medical history. Family members may also be aware of the date of injury. A learning disorder, growth disorder, or low intelligence should be identified so that appropriate methods of training can be incorporated in the management of patient rehabilitation. Processing speed, attention, verbal learning can be impaired in people with or TBI observed in the absence of documentary LOC²⁰. Verbal learning ability, in particular, may be directly by visible consecutive reporting period^{21,22}.

As previously mentioned, the fall of the most common causes of injury for people over age 65, followed by "other" reasons comes motor vehicle accidents. Spinal cord injuries, including rapid reduction in speed presumably with fall- is likely to lead to concomitant cognitive impairment. Apart from the injury, those 65 and older are at increased risk of age-related cognitive decline. Aging in normal memory changes the processing speed. While believed to be remained, normal people over 65 are at risk for cognitive disorders such as mild cognitive impairment (MCI). Word memory tests are used to quickly check the people with MCI. Most people with MCI have not received a definitive diagnosis²⁰. In more severe cases, dementia and other neurological disorders that affect on people over 65, largely may affect progress in rehabilitation. For patients over 65, Assessment of cognitive function and related disorders can be an

advantage for rehabilitation. Many people with SCI for the treating of rehabilitation encounter complex medical regimens. Analgesics, sedatives, anticonvulsants and antispasmodics likely to reduce their cognitive abilities. Drug interactions may increase cognitive impairment. The interaction between prescription drugs, over-medication and dietary supplements can naturally negatively impact on physical and cognitive performance. Patients and their families may not be aware of this potential risk, and may not think this extra material must be mentioned when they are asked to give a list of medications, it is recommended that lists all drugs to be included in the assessment²².

Previous diseases are important in the rehabilitation. Psychiatric disorders such as depression and schizophrenia affect the cognitive abilities. Abnormalities detected in the patient's medical record should be mentioned or known to the primary care physician. In most cases, neurological evaluation to measure mental performance includes dual objectives signs of psychological influence on the identification and planning of mental health intervention is appropriate.

It is essential that cognitive impairment resources be identified and, more importantly, the effects of impairments leave must be drawn. These effects and strategies should be considered in rehabilitation programs of individual in order to successful rehabilitation occur. When a complete neurological evaluation is not possible, rehabilitation staff must first obtain information about the patient's history. Rehabilitation experts must consider the previous mild cognitive age-related impairment, and not detected or dementia in older people with SCI. Many people who suffer may have an outstanding trauma history, and imprudence puts them at risk for previous damage²³⁻²⁵. It is possible that some abnormalities of the patient may be detected. Untreated Cognitive disorders of injuries or disorders that have occurred previously must be investigated.

Previous studies have shown that cognitive function patterns emerged is different⁹. The researchers hypothesized that these patients may have a head injury and cognitive impairment must be identified after a year of injuries and evidence of mild memory impairment, attention deficit, poor cognitive flexibility and processing speed are shown. Blow to the head at any time can accelerate cognitive decline associated with natural aging. The researchers believe that patients may have poor premorbid cognitive functioning or frontal lobe damage. Common assessment of neuro-cognitive for people with SCI in the years following injury with

a periodic review of progress of every patient skills, emotional assessment, and social performance is emphasized. The study of cognitive impairment in these patients can be complicated. However, understanding of the cognitive abilities necessary to create a realistic plan for rehabilitation treatment in these patients. LOC may occur at the time of SCI. Patients or witnesses may not report the LOC at the time of the accident. So physicians are recommending including a specific question about the LOC rehabilitation assessment protocol. Glasgow Coma Scale (GCS) is designed to measure objectively the level of unconsciousness in the TBI. This scale is widely used at the emergencies and hospitals^{26,27}. Using the GCS allows physicians to determine the severity, outcome prediction and clinical management. PTA is an amount to measure the extent of damage to the brain. PTA is a stage for the passage from the confusion that is described with the mental and behavioral disorders²⁸. It is considered from the starting moment the damage till the time that a patient may be able to provide a clear and consistent history of events. Galveston Orientation and Amnesia Test (GOAT) were used for orientation and amnesia of a closed head injury. GOAT is easily used for patients in hospitals and is very useful for the diagnosis of PTA in patients²⁹. GOAT allows doctors to identify the current trends of patients as well as an estimation of the PTA period. Moreover, GOAT may be repeated as a measure to evaluate a patient's progress from starting of PTA to solve the problem of PTA. Medical evaluation, such as skull films, computed tomography (CT) scans and magnetic resonance imaging (MRI) is often used to detect TBI. Skull films are simple diagnostic tool and also provide valuable clinical information about the likelihood and severity of cognitive impairment. However, the physician should be aware that negative findings in this way do not mean that traumatic brain injury has occurred. For example, mild brain trauma resulting in positive LOC may not be seen on MRI until they produce cognitive deficits. Different types of cognitive impairments observed following TBI is often the result of significant challenges in the patient. Often, deficits in the areas of arousal, attention, memory, processing information and both receptive and expressive skills language skills can be seen^{30,31}. These deficits can determine it to SCI, TBI rehabilitation team is the first to focus treatment and specifically, explains the medical staff may choose to focus on the components of the patient's cognitive and behavioral rehabilitation until the patient clearly is able to retain the information learned. Among cognitive disorders may be stable and

keep attention deficit disorder, rehabilitation is the most obvious new information. If patients cannot understand, maintain and use the new information, a lot of training may be provided in rehabilitation in the hospital which will have no effects. Therefore, it is essential for memory and attention disorders in the early rehabilitation to help staff identify the best learning strategies for recovery. If the patient is not able to provide learning strategies in the rehabilitation, family or caregivers need to learn how to perform the patient's daily tasks to keep him healthy.

Poor performance with TBI can significantly impair the rehabilitation period. Difficulties in executive function can include deficits in start of the work, problem solving, reasoning, decision-making, planning and organizing³². The ability to learn and adapt to new demands, cognitive and physical rehabilitation are essential requirements. So, without full executive capacity, training the rehabilitation tasks is boring and hard for the patients. Maximum structure required to help patients is often to learn skills. Other flaws in the executive function, such as vision, changing concepts, flexible thinking and abstract thinking abilities can make rehabilitation very difficult. Patients with this defect may not need help to understand the problems. It is needed to take care of the patient during rapid changes in physical activity and cognitive during the day to reduce patient participation and disappointment in cognitive impairment.

Perseveration common consequences of brain injury in patients can lead to repeated verbal or physical behavior and the frequency of the intellectual content, as a result, Perseveration defects in proprioception, which can distract a person from within and external to the position that they are able to participate in work or training necessary treatment and limit the overall performance is not provided.

CONCLUSION

Rehabilitation setting a huge challenge for those who are facing the loss of executive function. Patients suddenly are forced out of their daily lives to a strange and unfamiliar environment without cognitive capacity with the significant environmental changes. Each work is a new term for most patients even as bowel and bladder care, significantly altered. Patients are isolated from family and loved ones and for patients who have cognitive impairment^{30,31}, these are sudden environmental changes and they are barriers to learning and incorporating new skills. Treatment areas are affected by the changes of visual and auditory stimuli and force the patient and to change direction several times each day. Cognitive fatigue

can happen quickly and it has negative impact on the patient's physical performance. cognitive disorders have a wide range and considering these disorders and their treatment has an important role in accordance with the patient's life and improving the quality of his life, and considering the development of rehabilitation centers for patients based on new information has an important role in the treatment of these patients and researchers by exchanging their own documentary knowledge play an essential role in the promotion of these centers.

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