



STUDIES ON COGNITIVE FUNCTION AND SOCIAL FUNCTION

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ABSTRACT

Traumatic brain injury (TBI) is one of the major causes of human mortality and morbidity in the world. Brain injury could affect the core of a person's being – their thinking, memory, personality and behaviour. To assess the cognitive and social function in traumatic brain injury patients, this review will focus on some of methods for assessing the disabling cognitive and social function deficits induced by TBI.

KEY WORD: *Traumatic brain injury (TBI) , human mortality and morbidity.*



INTRODUCTION:-

TBI (**Traumatic brain injury**) is one of the major causes of human mortality and morbidity in the world, with at least 10 million serious traumatic brain injuries occurring annually [1,2]. TBI is a complex, heterogeneous disorder with many factors, contributing to a spectrum of severity from mild TBI to severe brain injury. From 2000 to 2015, 82% of military members in U.S. sustained a TBI is classified as mild TBI (mTBI) [3]. TBI is not a disease, but it is an event. More precisely, TBI is an event or a sequence of events that can, in some instances, lead to a diagnosable neurological or psychiatric disorder [4].

COGNITIVE FUNCTION AND SOCIAL FUNCTION

Cognitive function is “the mental action or process of acquiring knowledge and understanding through thought, experience, and senses” [5]. It encompasses processes, including knowledge, attention, memory and working memory, judgment and evaluation, reasoning and “computation”, problem solving and decision-making, comprehension and production of language. Cognitive processes use existing knowledge and generate new knowledge. Cognitive dysfunction is a prominent symptom after TBI, including planning, problem solving, temporal organization, attention, cognitive-behavioural and psychobehavioural disorders. Persistent memory impairment and executive function impaired after TBI is also common [6]. Retrograde amnesia persists in patients who survive TBI, similar to cognitive deficits often associated with TBI [7]. Survivors of severe TBI often have cognitive control functions impairments. The TBI patients showed a specific performance deficit suggestive of a failure to implement cognitive control in the service of processing conflict information and detecting response conflict and signalling for recruitment of cognitive resources to properly adjust performance [8,9]. The mTBI is associated with intact conflict monitoring, and also alters conflict adaptation and adjustment processes [10]. Yu et al. [11] suggest that even very mild mechanical events may lead to a quantifiable neuronal network dysfunction, and mild pediatric TBI could result in functional deficits that are more serious than appearance at present [12].

ASSESSMENT METHODS

There are substantive reviews and empirical papers proposing important questions on reflecting the spectrum of injury severity of survivors of TBI. The approaches include somatic, autonomic and central nervous system psychophysiological ways, and brain imaging (e.g. structural and functional magnetic resonance imaging, fMRI). A literature integrates information across these domains [13]. The review paper reflects the multiplicity of contemporary cognitive and social function assessment methods in the patients after TBI.

NEUROPSYCHOLOGICAL ASSESSMENT

Neuropsychological assessment was traditionally carried out to assess the extent of impairment to a particular skill and to attempt to determine the area of the brain which may have been damaged following brain injury. It focuses on the assessment of cognition and behaviour, including examining the effects of any brain injury or neuropathological process that a person may have experienced. Neuropsychological testing is more than the administration and scoring of tests and screening tools. It is essential that neuropsychological assessment also include an evaluation of the person's mental status.

ELECTROPHYSIOLOGICAL MARKERS

In neuroscience, electrophysiology includes measurements of the electrical activity of neurons, and in particular, action potential activity. The electrophysiological research comprises electroencephalogram (EEG), sensory evoked potentials (EPs), and cognitive event-related potentials (ERPs). They are useful for electrodiagnosis and monitoring. EEG is an electrophysiological monitoring method of recording electrical activity of the brain. It is typically noninvasive, with the electrodes placed along the scalp, although invasive electrodes are sometimes used in specific applications. EEG measures voltage fluctuations resulting from ionic current within the neurons of the brain. Because EPs and ERPs are generated by neuronal activity, they are valuable for assessing the integrity of neural processing capabilities in patients sustained TBI [14]. Derivatives of the EEG technique include EPs, which involves averaging the EEG activity time-locked to the presentation of a stimulus of some sort (visual, somatosensory, or auditory). ERPs and oscillatory activity Alpha from the human EEG provides a rich source of data that helps clarify specific processing impairments in TBI patients. Colours are thought to affect human cognition and emotion. P300 amplitude and latency are valuable indexes for the evaluation of TBI patients, and that colour environments of red, green or darkness affect cognitive function [15]. Lew et al. [12] measured the P300 ERP, which has been shown to be a sensitive index of cognitive efficiency. TBI patients showed remarkable impaired electrophysiological and behavioural responses while attempting to detect affective facial cues [16]. Using auditory and visual stimuli (including facial affective stimuli),

CONCLUSION

Progress has been made in recent years in processes of cognitive deficits after traumatic brain injury, such as electrophysiological markers and brain imaging methods. There are many new technologies available to address TBI and recognition-related questions.

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