Traumatic Brain Injury and Associated Reactions

Traumatic brain injury (TBI) is the leading cause of death and disability amongst adolescents and young adults. Traumatic brain injury generally occurs as a result of a high-velocity impact to the head. In Australia, motor-vehicle accidents and falls are the two most common mechanisms of injury. The nature of the mechanism of injury means that there are often associated orthopedic injuries. Despite many people sustaining extensive orthopedic injuries, it is usually the extent of the injury to the brain that determines a person’s overall outcome.

Traumatic brain injury may result in a diverse range of symptoms and severity of symptoms. Cognitive sequelae may include problems with memory, planning, insight, concentration, and problem solving. Fatigue, anxiety, depression and irritability are also common. Physical problems include muscle weakness, poor balance, spasticity, reduced coordination and dexterity, muscle and joint stiffness and difficulty swallowing. Vision, communication, smell and taste are also commonly affected.

Given the diverse and complex nature of TBI, a comprehensive rehabilitation team is required to manage all aspects of a person’s care. The rehabilitation team for a person with TBI would typically include a rehabilitation physician, nurse, physiotherapist, occupational therapist, speech pathologist, neuropsychologist or clinical psychologist, and social worker. Dietetic input may also be required in the acute and chronic rehabilitation phases.

Currently, despite intensive rehabilitation, over 75% of survivors of moderate and severe TBI never return to full independence and function. This causes ongoing societal problems and reduced quality of life (QoL). Considerable clinical investigations have been conducted in relation to treatment of cognitive, communicative, social and behavioural disorders following TBI. Physical impairments and mobility limitations are prevalent, yet there are no evidence-based clinical practice guidelines for managing TBI since limited evidence exists for any physical interventions following TBI.

Many people with TBI have Associated Reactions (ARs) which are unwanted movements in the arms resulting in abnormal and uncomfortable limb posturing. ARs impose many functional limitations on the use of the arms. They increase the risk of contracture; impede walking and destabilise patients increasing the risk of falls. These patients are commonly self-conscious of this debilitating phenomenon, which has a marked impact on their body image, self-esteem and therefore social integration.

Clinical management is diverse and there is no clear definition of what an AR specifically is and its causes. As a result, there are no best practice management guidelines.

A major part of this problem lies in the methods for assessing ARs. The very nature of these reactions, being ‘associated’ means they are associated with movement and effort, commonly provoked by walking. To date, there has been no objective and clinically feasible method of evaluating ARs, their severity and response to treatment. Current research methodology for assessing ARs is variable and the majority of the testing procedures reported in the literature are static, that is, patient is in a seated or lying position and therefore, cannot reflect what happens when these patients are moving.
References


