Management of traumatic brain injury

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Traumatic brain injury (TBI) is among the most common of serious, disabling neurological disorders and, particularly, the most common cause of death and disability in young people. The management of TBI begins before patients arrive at the hospital and continues after their discharge. TBI is graded as mild (GCS 13-15), moderate (GCS 9-12), or severe (GCS 3-8) on the basis of the initial level of consciousness. There are still a lot of controversies in what is the optimal management of the TBI. Concussion is the mildest form of TBI and most symptoms resolve within weeks but some patients suffered from a post-concussion syndrome. Patients with severe TBI have a significant risk of hypotension, hypoxemia and brain swelling. These sequelae must be manage adequately to prevent the secondary brain injury. Maintaining systolic blood pressure is important in prehospital management because a single episode of hypotension was associated with increased morbidity and doubling of mortality. Secondary brain injury is the leading cause of deaths after TBI, and mostly caused by brain swelling with and increased intracranial pressure (IICP). Monitoring ICP and ICP-based treatment have been considered as essential in the management of severe TBI but recent study raised a question about its effectiveness. Decompressive craniectomy (DC) is by far the most commonly used surgical intervention to treat intractable IICP. However, about 50% of patients after DC suffered from one or more surgery-related complications and recent well-controlled study failed to show better clinical outcome in DC group compared with no-DC group in severe TBI patients. The guidelines for management of severe TBI from brain trauma foundation recommended a large frontotemporoparietal DC not less than 15 cm diameter for better outcome. Therapeutic hypothermia and barbiturate coma therapy are other issues of debate for the treatment of severe TBI patients.

TBI is a complex disease process and there are significant number of factors affect the patient's outcome. Advances in critical care systems have led to a significant reduction in mortality and disability from TBI but there are still debates in the optimal management of severe TBI patients. Scientific evidences from well-designed controlled study for treatment approaches is needed more.

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