

CARE AND DRUGS: WHICH BEST IMPROVES THE OUTCOME AFTER TBI?

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Severe head injury provoking diffuse axonal injury leads to a complete diaschisis with coma which includes absence of vigilance and consciousness. The reduction of acute diaschisis is promoted by adequate stimuli whereas inadequate stimuli (normally exaggerated stimulation) inhibits the reduction of diaschisis. The reorganization of the damaged brain rises from a low functional level (brain stem), reactivating oligosynaptic pathways, extending in the further evolution to higher level of function.

The goal of physical nursing therapy is to inhibit primitive motor functions and to develop more complex activity, reaching higher levels of brain reorganization. TBI normally affects the motor control of the brain stem which is disinhibited, increases decortication or decerebration pattern with a marked increase of muscle tone. The spastic pattern leads to shortening of muscle tendons, joints, and capsules which via the stimulated gamma-motoric system increases muscle tone. Again the deafferentation due to the absence of consciousness leads to a secondary reduction of input elaboration and to more prolonged diaschisis.

Intensive nursing care avoids decubiti and tertiary lesions and is the basis of a complication-free development of the brain-injured patient. Passive physical therapy efficiently avoids the development of muscle shortening, etc. periarticular calcifications, producing in the same time somatosensoric and proprioceptive inputs to the brain.

Early verticalization, stimulating the ascendant reticular system, for example on the Erigo, increases the vigilance and the patient's participation.

When the patient reaches an active level of participation, active physical therapy activates head, trunk, and hip control whereas occupational therapy increases the patient's cognitive functions and autonomy.

Although not many studies exist demonstrating the efficacy of nursing care and physical medicine in the remission phase of severe brain injury, it is universally accepted that these basic therapies are highly efficient. At the same time it is impossible to perform prospective blinded studies with a group of TBI patients without this basic therapy. A typical example: it would be absurd to demonstrate in a prospective study that jumping with a parachute from an airplane is safer than without!

On the other hand there are no clear studies that pharmacological treatment increases realistically patient's vigilance and participation except Amantadine Sulfate. Reduction of muscle tone is also feasible with pharmacological treatment, but side-effects, such as somnolence, reduction of participation and reduced cognitive function, typical symptoms of GABA-B-agonists, often hamper the patient's recovery.

For this reason the first line treatment in TBI is nursing care and rehabilitative therapy, and drug treatment increases the results only slightly.