

# “COMA POST-TRAUMATICO: STATO DELL'ARTE”

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Traumatic brain injury (TBI) is the most frequent cause of death in the population aged between 5 to 35 years. TBI can be divided into 4 grades, from mild to severest.

Severity and localization of TBI depends on direction, localization and intensity of the impact to the head. A great percentage of brain injury patients suffer from more than one impact. For documentation, archivation and biomechanical reconstruction of the impact the Innsbruck Impact scheme modified according to Spatz is helpful.

Based on clinical symptomatology, neuropathological findings and magnetic resonance imaging three forms of TBI have to be differentiated.


- 1) the linear outer brain trauma (type I - VI) with coup and contre-coup and cortical lesions,
- 2) the linear inner brain trauma divided in two types:
  - the linear inner, upper brain trauma with periventricular lesion (butterfly distribution)
  - the linear inner, lower brain trauma with lesions in the upper brain stem, the temporal lobe and the cerebellum.
- 3) the rotational brain trauma with intracerebral lesions of brain tissue and intra-and extracerebral haematomas.

Increase of supratentorial volume, tentorial herniation, and in the further course foraminal herniation might occur. In tentorial herniation an acute midbrain syndrome with four different phases develops (in full stage: coma, optomotoric dysfunctions, motor disturbances with stretch cramps and vegetative disinhibition), foraminal herniation with two phases of an acute bulbar brain syndrome leading to a breakdown of all brain stem functions (respiratory and cardiac arrest at last). Brain death syndrome might occur or an apallic syndrome may develop via a transitory stage. In rare cases a direct remission can be observed.

Main symptoms of the apallic syndrome, in the Anglo-American literature called vegetative state, are coma vigile, no recognition of the environment, flexed-stretched position of the extremities, optomotoric disturbances, primitive motor patterns and dysregulation of the vegetative system. 80% of apallic patients develop a remission stage, with 8 different phases. In Phases III to V typical symptoms of Klüver-Bucy syndrome are the leading features. Patients reaching Klüver-Bucy stage promise a good prognosis.

In the Klüver-Bucy stage local brain lesions, depending on the primary and secondary lesions of the brain, can be noticed for the first time. In the further course these local neurological lesions may deteriorate, and decisively decide the clinical appearance. Tertiary lesions such as polyneuropathy, encephalopathy, myelinolysis and myelopathy have a great influence on the outcome of the patient, the same goes for complications like contractures, periarticular ossifications etc..

Patients with an apallic syndrome of various origins need a special treatment, which has to start in the initial stage of the acute mid-brain syndrome. Every apallic patient has to be brought in a special centre. Getting a specific individual organized treatment 30% of traumatic-apallic patients can be resocialized.



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