

Intracranial hypertension after traumatic brain injury

[External ventricular drain](#) (EVD) is frequently used to control [intracranial hypertension](#) after [traumatic brain injury](#). However, the available evidence about its effectiveness in this context is limited. The aim of this study is to evaluate the effectiveness of EVD to control intracranial pressure and to identify the clinical and radiological factors associated with its success.

Methods: For this retrospective cohort study conducted in a Level 1 trauma center in [Paris](#) area between May 2011 and March 2019, all patients with intracranial hypertension and treated with EVD were included. EVD success was defined as an efficient and continuous control of intracranial hypertension avoiding the use of third-tier therapies (therapeutic hypothermia, decompressive craniectomy, and barbiturate coma) or avoiding a decision to withdraw life-sustaining treatment due to both refractory intracranial hypertension and severity of brain injury lesions.

83 patients with EVD were included. EVD was successful in 33 patients (40%). Thirty-two patients (39%) required a decompressive craniectomy, eight patients (9%) received barbiturate coma. In ten cases (12%) refractory intracranial hypertension prompted a protocolized withdrawal of care. Complications occurred in nine patients (11%) (three cases of ventriculitis, six cases of catheter occlusion). Multivariate analysis identified no independent factors associated with EVD success.

In protocol-based management for [traumatic brain injury](#), EVD allowed intracranial pressure control and avoided third-tier therapeutic measures in 40% of cases with a favorable risk-benefit ratio ¹⁾.

In most cases, especially when contusions and edema develop over time, Intracranial hypertension will worsen over succeeding days. A study describes the incidence and severity of elevated intracranial pressure (ICP) after TBI and attempts to document its time course. In this prospective study, 201 TBI patients in whom [ICP](#) was monitored for more than 12 h were evaluated. ICP was measured, digitalized, and analyzed after manual filtering. The number of episodes of HICP and the mean ICP value for every 12-h interval was calculated. When monitoring was concluded, the highest mean ICP collected in every patient was identified. A total of 21,000 h of ICP monitoring were recorded. Active treatment to prevent or reduce HICP was used in 200 patients. HICP was documented in 155 cases. Half of the patients had their highest mean ICP during the first 3 days after injury, but many showed delayed ICP elevation, with 25% showing the highest mean ICP after day 5. In these cases, HICP was significantly worse and required more intense therapies ²⁾.

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