The management of traumatic brain injury (TBI) aims to maintain the normal cerebral perfusion in spite of the mass lesions that may occur (haematoma, contusion, and oedema). The monitoring of the intracranial pressure (ICP) is a step in that direction. The intra-parenchymal catheters have the lowest incidence of infection compared to intra-ventricular/subdural catheters with reliable and accurate pressure recordings. The major disadvantage of the intra-parenchymal catheters is the cost, especially in developing nations.

Resterilized intra-parenchymal strain gauge catheters can be used safely for ICP monitoring without any added risk of meningitis. The reusage of catheters can bring down the costs. Resterilized catheters/equipment have been approved for usage in cardiac usage, but such study on ICP catheters has not been carried out so far in any part of the world.

A total of 100 consecutive cases of severe TBI receiving ICP monitoring at a level 1 trauma center of a developing nation were prospectively studied (34 cases had fresh catheters, and 66 had resterilized [using ethylene oxide] catheters).

The use of reused resterilized catheters was not associated with increased incidence of meningitis or fever (the surrogate marker for infection in this study). Also, there was concordance between the pressure recording of reused catheters and operative finding/subsequent computed tomography scans. These catheters after sterilization could be reused 2-4 times and reliably recorded the ICP (insignificant drift) with no increase in the incidence of meningitis.

Usage of resterilized intra-parenchymal ICP catheters is feasible, safe, efficacious, and cost effective and brings down the cost of monitoring significantly [1].

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248 patients with mean age of 34.6 ± 16.6 years among whom there were 216 (87.1%) men and 32 (12.9%) women. Eighty five (34.2%) patients had favorable outcome and 163 (65.8%) had unfavorable. Khalili et al found that those with favorable outcome had significantly lower age ($p=0.004$), higher GCS on admission ($p<0.001$), lower Rotterdam score ($p=0.035$), less episodes of intracranial hypertension ($p<0.001$) and lower max recorded ICP ($p=0.041$). These factors remained statistically significant after elimination of confounders by multivariate logistic regression model.

Age, on admission GCS, Rotterdam score, intracranial hypertension and max recorded ICP are important determinants of outcome in patients with severe TBI. ICP monitoring assisted us in targeted therapy and management of patients with severe TBI [2].

ICP monitors were inserted into 287 patients (59.5%). After propensity score matching, ICP monitoring significantly decreased 6-month mortality. ICP monitoring also had a greater impact on the most severely injured patients on the basis of head computed tomography data (Marshall computed tomography classification IV) and on patients with the lowest level of consciousness (GCS scores 3-5). After propensity score matching, monitoring remained nonassociated with a 6-month favorable outcome for the overall sample. However, monitoring had a significant impact on the 6-month favorable outcomes of patients with the lowest level of consciousness (GCS scores 3-5).

ICP monitor placement was associated with a significant decrease in 6-month mortality after adjustment for the baseline risk profile and the monitoring propensity of patients with diffuse severe TBI, especially those with GCS scores of 3 to 5 or of Marshall computed tomography classification IV [3].

During 1977-1978, 127 patients with severe head injury were admitted and underwent intracranial pressure monitoring. All patients had Glasgow Coma Scale (GCS) scores of 7 or less. All received identical initial treatment according to a standardized protocol. The patients' average age was 29 years; 60% had multiple trauma, and 35% needed emergency intracranial operations. Treatment for elevations of ICP was begun when ICP rose to 20 to 25 mm Hg, and included mannitol therapy and drainage of cerebrospinal fluid (CSF) when possible. Forty-three patients (34%) had ICP greater than or equal to 25 mm Hg; of these, 36 (84%) died. The mortality rate of the entire group was 46%. During 1979-1980, 106 patients with severe head injury were admitted and underwent ICP monitoring. Their average ager was 29 years; 51% had multiple trauma, and 31% underwent emergency intracranial surgery. All patients received the same standardized protocol as the previous series, with the exception of the treatment of ICP. In this present series: if ICP was 15 mm Hg or less (normal ICP), patients were continued on hyperventilation, steroids, and intensive care; if ICP was 16 to 24 mm Hg, mannitol was administered and CSF was drained; if ICP was 25 mm Hg or greater, the patients were randomized into a controlled barbiturate therapy study. Twenty-six patients (25%) had ICP's of 25 mm Hg or greater, compared to 34% in the previous series (p less than 0.05), and 18 of these 26 patients (69%) died. The overall mortality for this current series was 28% compared to 46% in the previous series (p less than 0.0005). This study reconfirms the high mortality rate if ICP is 25 mm Hg or greater; however, the data also document that early aggressive treatment based on ICP monitoring significantly lessens the incidence of ICP of 25 mm Hg or greater and reduces the overall mortality rate of severe head injury [4].

1)
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