## **Rosner concept**

Early results using cerebral perfusion pressure (CPP) management techniques in persons with traumatic brain injury indicate that treatment directed at CPP is superior to traditional techniques focused on intracranial pressure (ICP) management.

One hundred fifty-eight patients with Glasgow Coma Scale (GCS) scores of 7 or lower were managed using vascular volume expansion, cerebrospinal fluid drainage via ventriculostomy, systemic vasopressors, and mannitol to maintain a minimum CPP of at least 70 mm Hg. Detailed outcomes and follow-up data bases were maintained. Barbiturates, hyperventilation, and hypothermia were not used. Cerebral perfusion pressure averaged 83 +/- 14 mm Hg; ICP averaged 27 +/- 12 mm Hg; and mean systemic arterial blood pressure averaged 109 +/- 14 mm Hg. Cerebrospinal fluid drainage averaged 100 +/- 98 cc per day. Intake (6040 +/- 4150 cc per day) was carefully titrated to output (5460 +/- 4000 cc per day); mannitol averaged 188 +/- 247 g per day. Approximately 40% of these patients required vasopressor support. Patients requiring vasopressor support had lower GCS scores than those not requiring vasopressors (4.7 +/- 1.3 vs. 5.4 +/- 1.2, respectively). Patients with vasopressor support required larger amounts of mannitol, and their admission ICP was 28.7 +/- 20.7 versus 17.5 +/- 8.6 mm Hg for the nonvasopressor group. Although the death rate in the former group was higher, the outcome quality of the survivors was the same (Glasgow Outcome Scale scores 4.3 +/- 0.9 vs. 4.5 +/- 0.7). Surgical mass lesion patients had outcomes equal to those of the closed headinjury group. Mortality ranged from 52% of patients with a GCS score of 3 to 12% of those with a GCS score of 7; overall mortality was 29% across GCS categories. Favorable outcomes ranged from 35% of patients with a GCS score of 3 to 75% of those with a GCS score of 7. Only 2% of the patients in the series remained vegatative and if patients survived, the likelihood of their having a favorable recovery was approximately 80%. These results are significantly better than other reported series across GCS categories in comparisons of death rates, survival versus dead or vegetative, or favorable versus nonfavorable outcome classifications (Mantel-Haenszel chi 2, p < 0.001). Better management could have improved outcome in as many as 35% to 50% of the deaths <sup>1)</sup>.

## see Lund concept

## 1)

Rosner MJ, Rosner SD, Johnson AH. Cerebral perfusion pressure: management protocol and clinical results. J Neurosurg. 1995 Dec;83(6):949-62. PubMed PMID: 7490638.

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