Is ICH Score the Best for Predicting Outcome in Patients with Intracerebral Hemorrhage?

Vikram Londhey

A cute intracerebral hemorrhage (ICH) is one of the common cause of stroke which has a high morbidity and mortality across the globe ranging from 10 to 15 percent. The mortality rate of patients suffering from ICH is as high as 30 to 50% within the first month as compared to cerebral infarction or subarachnoid hemorrhage. Predicting outcome after ICH is a challenging task which is based on clinical, biochemical, haematological and radiological parameters. Not only the medical parameters; but also the socioeconomic factors like financial status and affordability of the patient to the medical care and the availability of expertise during the acute setting are equally important on which the outcome of ICH depends in the public as well as the private sector.

The causes of ICH are trauma, ruptured arteriovenous malformations and aneurysms, patients on anticoagulants, coagulopathy related hemorrhage, uncontrolled hypertension presenting as hypertensive crisis. The common sites of ICH are basal ganglia, thalamocapsular region, brainstem and cerebellum. The outcome of ICH can be predicted by using various scoring systems that have been developed like ICH score, Rankin score, modified Rankin score, FOUR score and APACHE II score. These scores are valuable as they offer standardized assessment. These scores can be used for risk stratification while selecting the treatment of such cases and as research tools in the setting of clinical trials. There are various studies which have compared one score with the other in predicting the outcome of ICH.

The ICH score is one such predictive tool for assessing mortality at 30 days after hemorrhagic stroke.1 The ICH score is a 6 point calculation based on 5 clinical parameters. Depending on the clinical parameters, the scoring system is developed. Each parameter is given a score from 0 to 1; except GCS which ranges from 0 to 2.

1. Age ≥ 80 years: Yes = 1; No = 0.
2. Glasgow Coma Scale (GCS): GCS Score 3 to 4 (=2 points); GCS score 5 to 12 (=1); GCS score 13 to 15 (=0).
3. Volume of hematoma on baseline CT Scan of Brain: ICH Volume ≥30 cm^3 (=1); ICH Volume ≤30 cm^3 (=0).
4. Location of Hematoma (infratentorial or supratentorial): Infratentorial origin (Yes = 1) (No = 0).
5. Presence of intraventricular extension: Yes = 1; No = 0.

Thus, the score ranges from 0 to 6. As the score increases from 0 to 6, it indicates worsening in the outcome. The ICH score has been validated for 30 day and one year functional outcome in some studies.2,3 Studies have also assessed its utility as a predictor of in hospital mortality and discharge outcome in spontaneous ICH.4 The ICH score is simple, less time consuming in its calculation, reliable, reproducible, user friendly (does not require any special training in Neurology) and is validated to predict 30 day mortality.4-6

Gupta VP and colleagues have compared various scores for predicting the outcome after ICH. Two separate scoring systems (Intracerebral Hemorrhage Outcomes Project—ICHOP 3) and [ICHOP12] were developed for 3-month and 12-month functional outcomes using GCS, National Institutes of Health Stroke Scale, Acute Physiology and Chronic Health Evaluation II, premorbid modified Rankin Scale (mRS) and hematoma volume. The hematoma volume was considered only in ICHOP3 and not included in ICHOP12 as it would have

resolved till then. Patient outcomes were divided as good when mRS score was between 0 to 3 and poor when mRS score was between 4 to 6. The ICHOP scores may provide more comprehensive evaluation of a patient’s long-term functional prognosis by taking into account systemic physiologic factors as well as premorbid functional status.2

Pan K and the co-investigators conducted a prospective observational study in which they compared the ICH and APACHE II scores in patients with spontaneous ICH for predicting 30 day mortality outcome. In this study it was observed that ICH score had a better discriminating power for predicting the 30-day mortality in spontaneous ICH as compared to the APACHE II score.8

The Full Outline of Unresponsiveness (FOUR) score is a validated scale describing the essentials of a coma examination, including motor response, eye opening and eye movements, brainstem reflexes and respiratory pattern. In a study by Braaksick et al, they incorporated the FOUR Score into the existing ICH Score and evaluated its accuracy of risk assessment in spontaneous ICH. The FOUR Score was used as a substitute for the GCS to form an ICH Score FS. The ability of the 2 scores to predict mortality at 1 month was then compared in this study. The ICH Score and the ICH Score FS predict 1-month mortality with comparable accuracy as reported by the authors in this study. As the FOUR score provides additional clinical information regarding patient status, it may be a reasonable and valuable substitute for the GCS while calculating the ICH score.9

In this current Issue of JAPI,10 a study titled “Clinical Profile of patients with
Acute Intracerebral Hemorrhage and ICH score as an Outcome predictor on discharge, 30 days and 60 days follow up”, by Piyush Oza is being published. This study was done to prospectively evaluate the predictive utility of ICH score, to predict the outcome in patients presenting with acute ICH at the time of discharge, 30 days and 60 days. The ICH score was calculated at the time of admission. In a study reported by Aimee et al11 the ICH score calculated at 24 hours after admission has a better predictive value than the ICH score calculated at the time of admission. By 24 hours, the hematomas have been stabilised and definitive therapies have been provided by then. The present study by Oza et al has a small sample size as compared to the commonness of the clinical condition and they have assessed the ICH score on admission and not after 24 hours as recommended in the study by Aimee. GCS was also an independant predictor for the survival and morbidity outcome in this study. The patients in this study were also assessed by mRS. Thus there was utilisation of the various existing scoring systems for predicting outcome following ICH. Nevertheless, this study has helped to add our existing knowledge about the outcome of ICH and plan strategies for the medical care providers, patient and their relatives.

References