Spontaneous Intracranial Hemorrhage Guideline

The new Intracranial Hemorrhage guidelines serve as an important resource for neurosurgeons and all stroke care team members. Although much ambiguity remains regarding the management of this challenging disease, there is now growing evidence that a thoughtful and proactive approach can make a difference in outcomes. Much innovation is yet to come, and neurosurgeons can be a great force for progress in this important area of health care. Future advances will likely focus on earlier diagnosis and intervention (likely in an ambulance or at the site of ictus), prevention of clot expansion, reduction in the negative sequelae to surrounding brain tissue, and minimally invasive clot evacuation [1].

Recent advances in our understanding of the pathophysiology of this disease and the recent publication of important clinical trials have prompted the need for an update to these guidelines. The American Heart Association has played a leadership role in the periodic assimilation and publication of high-quality multidisciplinary stroke-related guidelines. The spontaneous intracranial hemorrhage (ICH) guidelines were last published in 2010 [2].

The newly published guidelines in the July 2015 issue of Stroke have added a number of new recommendations, including 3 new Class I recommendations, compared with the 2010 guidelines [3]

The 3 new Class 1 study recommendations concern initial triage, dysphagia assessment, and blood pressure management during follow-up. For diagnosis and assessment, the guidelines emphasize obtaining a baseline severity score (Class I; Level of Evidence B). Many ICH grading scales have been proposed, but the ICH Score has been most rigorously validated [4] [5] [6] [7] [8].

Accurate grading helps document and communicate the patient's overall condition and facilitates communication between providers. It also optimizes outcomes benchmarking. In addition, the current guidelines emphasize proper dysphagia screening for all ICH patients before they start oral intake to reduce risk of pneumonia (Class I; Level of Evidence B), the most common medical sequelae seen in this patient population [9].

The third new Class I recommendation concerns the prevention of recurrent ICH during follow-up with blood pressure control (Class I; Level of Evidence A). The Perindopril Protection Against Recurrent Stroke Study (PROGRESS) has demonstrated that the risk of ICH recurrence was lowest among patients with lower blood pressure levels on follow-up (median, 112 mm Hg systolic and 72 mm Hg diastolic) [10].

In terms of revisions of prior Class I recommendations, 2 have been revised significantly. First, regarding deep vein thrombosis prophylaxis, the new guidelines were revised to clearly state that deep vein thrombosis preventive measures should start on the first day of admission with intermittent pneumatic compression. As was evident in the 3 Clots in Legs or Stockings After Stroke (CLOTS) trials, intermittent pneumatic compression starting on the first day of hospital stay decreased the incidence of deep vein thrombosis, especially in patients suffering from hemorrhagic stroke (6.7% vs 17.0%, odds ratio, 0.36; 95% confidence interval, 0.17-0.75) [11].

Second, the new guidelines emphasize the importance of early inpatient rehabilitation to accelerate the recovery process [12].

Surgical intervention for acute supratentorial ICH remains a hotly debated topic. Three new Class II recommendations are focused on surgical intervention. Regarding evacuation of spontaneous ICH, the new guidelines state that supratentorial hematoma evacuation might be considered life-saving in

deteriorating patients (Class IIb; Level of Evidence C). On the basis of recent published small case series, decompressive craniectomy with or without hematoma evacuation may reduce mortality for a subset of patients with supratentorial ICH (Class IIb; Level of Evidence C). Timing of hematoma evacuation remains controversial, whether early or when patients deteriorate (Class IIb; Level of Evidence A). For increased intracranial pressure, ventricular drainage should be considered to treat hydrocephalus, mainly in patients with decreased level of consciousness (Class IIa; Level of Evidence B). The guidelines acknowledge the growing enthusiasm for minimally invasive clot evacuation, but data remain insufficient to make a minimally invasive approach a guideline recommendation. The Minimally Invasive Surgery Plus Recombinant Tissue-Type Plasminogen Activator for ICH Evacuation II Trial (MISTIE II) has shown promising results in establishing the benefit of minimally invasive surgery plus local recombinant tissue-type plasminogen activator in treating ICH [13].

The MISTIE III trial is currently underway to confirm the aforementioned added value of surgical intervention.

Concerning posterior fossa hemorrhage, the guidelines advise an aggressive surgical approach for select patients:

Patients with cerebellar hemorrhage who are deteriorating neurologically or who have brainstem compression and/or hydrocephalus from ventricular obstruction should undergo surgical removal of the hemorrhage as soon as possible (Class I; Level of Evidence B). Initial treatment of these patients with ventricular drainage rather than surgical evacuation is not recommended (Class III; Level of Evidence C) [14] [15] [16].

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