

## REKOMENDASI PENANGANAN *STROKE* PERDARAHAN INTRASEREBRAL

Recommendations for emergency diagnosis and evaluation of ICH are that ICH is a medical emergency, with frequent early, ongoing bleeding and progressive deterioration, severe clinical deficits, and subsequent high mortality and morbidity rates. Therefore, it should be promptly recognized and diagnosed (class I, level of evidence A). Computed tomography (CT) and magnetic resonance imaging (MRI) are each first-choice initial imaging options (I, A), but in patients in whom MRI is contraindicated, CT should be done.

### Recommendations for initial medical therapy for ICH are as follows:

Monitoring and treatment of patients should occur in an **intensive care unit setting** because ICH is an emergent condition with frequent elevations in ICP and blood pressure, frequent need for intubation and assisted ventilation, and multiple complicating medical issues (I, B).

**Treatment of elevated ICP** should be balanced and graded, beginning with simple measures (eg, elevating the head of the bed, analgesia, and sedation). More aggressive therapies, such as osmotic diuretics (mannitol and hypertonic saline), drainage of cerebrospinal fluid with a ventricular catheter, neuromuscular blockade, and hyperventilation, usually require concomitant monitoring of ICP and blood pressure with a goal to maintain cerebral perfusion pressure above 70 mm Hg (IIa, B).

Maintain **euglycemia** (IIa, B).

**Treat fever** to normal body temperature (IIa, B).

For patients who are clinically stable, **early mobilization and rehabilitation** are recommended (IIa, B).

**Manage blood pressure** based on the presently available incomplete evidence, pending results from ongoing clinical trials of blood pressure intervention for ICH.

In 1 moderate-sized phase 2 trial, treatment with **recombinant activated factor VII** within the first 3 to 4 hours after onset appeared to slow progression of bleeding. However, the efficacy and safety of this treatment must be confirmed in phase 3 trials before its use in ICH can be recommended outside of a clinical trial (IIb, B).

Appropriate **antiepileptic drugs** should always be used for treatment of clinical seizures (I, B). Short-term use of prophylactic antiepileptic drugs soon after ICH onset may decrease the risk for early seizures in patients with lobar hemorrhage (IIb, C).

### Recommendations for management of coagulation and fibrinolysis issues related to ICH are as follows:

Use **protamine sulfate** to reverse heparin-associated ICH, with the dose depending on the time from cessation of heparin (I, B).

To reverse the effects of warfarin, treat patients who have warfarin-associated ICH with **intravenous vitamin K** and with treatment to replace clotting factors (I, B).

**Prothrombin complex concentrate, factor IX complex concentrate, and recombinant activated factor VII** normalize the laboratory elevation of the international normalized ratio very rapidly and with lower volumes of fluid than fresh frozen plasma. However, potential of thromboembolism is greater. Fresh frozen plasma is an option but is associated with greater volumes and much longer infusion times (II, B).

The decision to restart antithrombotic therapy after ICH related to antithrombotic therapy depends on the risk for subsequent arterial or venous thromboembolism, the risk for recurrent ICH, and the patient's overall condition (IIb, B).

Treatment of patients with ICH caused by thrombolytic therapy includes urgent empirical therapies to replace clotting factors and platelets (IIb, B).

### Recommendations for surgical approaches are as follows:

Patients **with cerebellar hemorrhage greater than 3 cm** with neurologic deterioration or brain stem.

Compression and/or hydrocephalus from **ventricular obstruction** should have surgical evacuation of the hemorrhage as soon as possible (I, B).

Stereotactic infusion of urokinase into the clot cavity within 72 hours apparently reduces the clot burden and risk for death. However, rebleeding is more common and functional outcome is not improved (IIb, B).

The usefulness of minimally invasive clot evacuation with a variety of mechanical devices and/or endoscopy needs further testing in clinical trials (IIb, B).

Consider evacuation of supratentorial ICH by standard craniotomy for patients presenting with **lobar clots within 1 cm of the surface** (IIb, B).

Routine evacuation of supratentorial ICH by standard craniotomy within 96 hours of ictus is not recommended (III, A).

"The first scientifically proven treatments for acute ICH are likely to become a reality during the next 5 years, and possibly sooner for some, such as rFVIIa," the authors conclude. "New trials of antihypertensive therapy, surgical removal of ICH, and other adjunctive therapies are ongoing, but sustained efforts are needed to decrease the high morbidity and mortality rates associated with this deadly type of stroke."