

Cerebral aneurysm rupture: Rx

Aneurysm repair with surgical clipping or endovascular coiling is the ultimate goal but initial treatment is often aimed to be supportive. Endovascular treatment of cerebral aneurysms include coiling, stenting, or embolization.

The mainstays of treatment is to prevent further complications associated with SAH (Subarachnoid hemorrhage) such as rebleeding and vasospasm. Initial stabilization includes assessing and securing airway if needed, normalizing CV function, and treating seizures. The ideal range for blood pressure control is unclear but generally SBP <160 or MAP <110 although it is important to avoid hypotension. While decreasing BP will lower risk of rebleeding in a patient with an unsecured aneurysm, this reduction might be offset by increased risk of infarction. In patients with increased ICP, lowering BP can lead to decreased CPP and ischemia.

Anesthetic goals of cerebral aneurysm surgery include stable BP to avoid rupture, maintain CPP, and plan in place in case of rupture.

Inadvertent rupture during dissection can occur. Treatment is supportive including maintaining adequate BP (controlled hypotension may be required to decrease bleeding and provide adequate surgical visualization) and blood transfusion. Adenosine induced circulatory arrest can be used to facilitate clipping of the aneurysm.

The risk of rebleeding is highest in the first 24-72 hours after initial bleed. Mortality is extremely high (70% or higher). The risk of delayed cerebral ischemia from vasospasm generally begins around day 3 and peaks around 7 days after initial bleed. Nimodipine is often used to lower risk of vasospasm

Historically triple H therapy (Hypertension, hypervolemia, and hemodilution) was used to help prevent vasospasm, however, keeping the patient euvolemic and avoiding the complications of hypervolemia is the current recommendation.

Two different scoring systems for SAH are the Hunt and Hess clinical grader and Fisher Grades for imaging. These can be used to predict morbidity and mortality associated with cerebral aneurysms and SAH.

Hunt and Hess Clinical Grade = Graded 0 through V. Grade 0 is unruptured aneurysm. Grade 1 is asymptomatic or mild headache. Grade V is deep coma, decerebrate rigidity.

Fischer Grades for CT = Grade 1-4. Grade 1 is no blood detected. Higher grade for thicker layer of subarachnoid blood. Predicts the incidence and severity of vasospasm.