
Highlights of Stroke Management

Overview: Key Factors to Optimize Care

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As noted in my prior article, anti-platelet therapy is essential in the treatment as well as prevention of ischemic strokes. The objective of this article is to outline other essential components of stroke management, specifically in the acute phase, to enhance the knowledge of staff and providers. Ultimately encouraging continued education and improving quality of care related to stroke patients and outcomes.

Blood flow and pressure is critical in stroke management. Intravenous fluids are used to assist with rehydration and intravascular volume support. Addressing fluid status and starting IV fluids is standard practice for most stroke patients. This is important when treating older patients as they are typically volume depleted, therefore requiring intravenous support. Isotonic fluid without dextrose is the therapy of choice for most patients. Hypotonic fluids are avoided due to the exacerbation of cerebral edema secondary to fluid shifts.

Glucose monitoring and management is not only important when discussing long-term care and prevention, but also crucial in the acute phase treatment. Hypoglycemia can mimic stroke symptoms by manifesting with focal neurological deficits. In severe hypoglycemia, neuronal injury can also occur. To avoid issues related to hypoglycemia, frequent blood glucose monitoring is recommended with treatment of serum glucose less than 60mg/dL. Alternatively, hyperglycemia can be detrimental as elevated glucose levels in acute stroke patients have been shown to result in poor outcomes.

Patient positioning is an aspect of patient care that tends to be overlooked when treating and managing acute ischemic strokes. Head of bed positioning should be considered and evaluated on an individual case basis as some patients may benefit from head of bed elevation where others might improve from supine, flat positioning. Head of bed should be elevated in patients with increased intracerebral pressure (i.e. hemorrhage, cerebral edema), aspiration risk and in those with cardiopulmonary decompensation or oxygen desaturation.

Some studies have found that cerebral perfusion is maximized when patients are in a supine position. In this specific subset of patients, symptoms secondary to ischemia worsen upon sitting, standing and elevating the head of bed. It is assumed that this is due to decreased cerebral flow secondary to vascular stenosis or collateral pathways. Patient positioning, specifically head of bed positioning, is an aspect of care that is obviously optimized during acute initial phase of stroke management and has shown to add little value in the late or chronic phases.

Proper management of blood pressure is a cornerstone in the treatment of acute stroke as well as stroke prevention. In the acute phases, perfusion pressure is key for adequate blood flow to the areas of ischemia and potential ischemia. It is crucial to maintain blood flow in borderline ischemic areas to help curb the potential for expansion of the stroke. Typically we observe an acute rise in blood pressure as a stress response during the initial phase of ischemic stroke. This is the body's response to protect the areas at risk in an attempt to increase flow and decrease stroke expansion. Maintaining adequate perfusion is necessary in the first 24 hours, or longer, when treating an ischemic stroke. Drop in blood pressure or rapid decrease of pressure in this phase could exacerbate symptoms and progress the stroke, leading to a poor outcome. When considered tPA for a patient, the blood pressure should be one the first vitals assessed and managed. Recommendations suggest that prior to initiating tPA, systolic blood pressure should be less than or equal to 185 mmHg and diastolic blood pressure less than or equal to 110 mmHg. These parameters (180/105) should remain for approximately 24 hours after thrombolytics are given. Alternatively, in patients with ischemic stroke who do not meet criteria for tPA, blood pressure should not be treated unless SBP is more than 220 mmHg or DBP more than 120 mmHg. This is obviously a guideline pertaining specifically to the stroke management but other factors such as heart failure, vascular issues or other medical concerns may contradict or inhibit maintenance of these parameters. Typically the blood pressure parameters are gradually weaned and adjusted after the initial acute phase of stroke management, with the intent of aggressive management to improve overall outcome.

The last factor to mention is the use of statins in stroke patients. Statins are helpful for reducing reoccurrence after ischemic events when they can be safely used and if there are no contraindications.

For a review of anti-platelet medications, refer to my prior article.