Physiology of Acute Stroke

Most likely involves a clot that has dislodged from a peripheral site (leg veins) and landed in a cerebral vessel (Thrombic Embolism) or perhaps a clot in situ (clot in place)

This can be very deadly.

In hemorrhagic the blood vessel has blown out and the patient is bleeding into the brain.

Secondary Prevention of Ischemic Stroke

Antiplatelet Therapy

Blood Pressure Management

Cholesterol Management

Antiplatelet Therapy

Antiplatelet therapy is recommended over anticoagulation therapy in post ischemic stroke (unless stroke was due to Afib/Cardioembolic, in which warfarin of other DOAC is indicated.

Recommended to start 24-48 hours post ischemic stroke. If patient was given IV alteplase, wait 24 hours after infusion to start antiplatelet therapy.

For patients with noncardioembolic ischemic stroke or TIA< aspirin 50 to 325 mg daily, clopidogrel 75 mg daily, or the combination of aspirin 25 mg and extended-release dipyridamole 200 mg twice daily is indicated for secondary prevention of ischemic stroke.

For high risk patients with recent minor ischemic stroke or high risk TIA, ASA + clopidogrel (DUAL therapy) should be initiated within 12-24 hours of symptoms onset and continued up to 90 days, followed by the continuation of single antiplatelet therapy long term.

Oral anticoagulants for Afib patients: dabigatran, apixaban, rivaroxaban, edoxaban, warfarin.

Blood Pressure Management

It is recommended that a person be started on a thiazide diuretic, ACEi, or ARB

CCBs have not been shown to be efficacious is secondary prevention, however they could be add ons to the above mentioned to help a patient achieve BP goals or in patients who are unable to take the first line agents.

A BP goal of < 130/80 mmHg is reasonable to help prevent secondary cardiovascular events.

Cholesterol Management

Patients aged 75 years or younger are recommended to be placed on a high intensity statin for secondary prevention.

Atorvastatin 80 mg

Rosuvastatin 20 mg (now generic, less drug interactions, and less potential for myalgias/ADRs)

tPA-Alteplase (Activase)

MOA:	leads to reperfusion by clot breakdown. tPA catalyzes the conversion of plasminogen to plasmin which then activates "fibrinolysis" which leads to **clot degradation/dissolvement**
Indications: who can receive this?	Patients presenting in a **3 hour time window** with mild to severe stroke symptoms (the goal with best evidence is 3 hours or less, some hospitals will do up to 4.5 hours)
	Patients in the 3-4.5 hour time window who are **80 yo or less**, without history of diabetes or stroke, no anticoagulant use.
	*It is important to try and achieve a door to needle time or no more than 60min for these patients eligible for Alteplase to increase efficacy. Brain imaging needs to be done within 20 minutes of patient arrival prior to Alteplase administration to check for hemorrhagic. (would make bleeding much worse)
Side Effects:	angioedema: stop the alteplase and ACEi if taking, start IV diphenhydramine and IV methylprednisolone, start IV ranitidine or famotidine. Can also start EPI if it worsens.

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tPA-Alteplase (Activase) (cont)

	Bleeding: stop alteplase, get CBC and INR, fibrinogen, and aPPT. **Get stat head CT**. Start cryoprecipitate (frozen plasma rich in clotting factors) (with factor VIII) and tranexamic acid (TXA)
Contra-indica-tion:	not after 4.5 hours (the clot becomes well organized, could become well hemorrhagic)
	not if CT shows acute intracranial hemorrhage
	Not if history of AIS within3 months.
	CI within 3 months of severe head trauma.
	CI within 3 months of major surgery.
	History of intracranial hemorrhage
	History or signs of SAH
	History of GI malignancy or bleed
	Not in patients who are hypercoagulable
Dosing:	0.9 mg/kg (max of 90 mg)
	10% given as a bolus over 1 minute
	90% given as an infusion over the next 59 minutes
Notes/-consid-era-tions	BP should be less than 185/110 mmHg prior to administr-ation to decrease chance of hemorrhage
	Glucose should be >50mg/dL before initiation

TPA

Infuse 0.9 mg/kg (maximum dose 90 mg) over 60 min, with 10% of the dose given as a bolus over 1 min.
Admit the patient to an intensive care or stroke unit for monitoring.
If the patient develops severe headache, acute hypertension, nausea, or vomiting or has a worsening neurological examination, discontinue the infusion (if IV alteplase is being administered) and obtain emergency head CT scan.
Measure BP and perform neurological assessments every 15 min during and after IV alteplase infusion for 2 h, then every 30 min for 6 h, then hourly until 24 h after IV alteplase treatment.
Increase the frequency of BP measurements if SBP is >180 mm Hg or if DBP is >105 mm Hg; administer antihypertensive medications to maintain BP at or below these levels (Table 5).
Delay placement of nasogastric tubes, indwelling bladder catheters, or intra-arterial pressure catheters if the patient can be safely managed without them.
Obtain a follow-up CT or MRI scan at 24 h after IV alteplase before starting anticoagulants or antiplatelet agents.

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