

In Neurology

ACUTE REPERFUSION STRATEGIES IN ACUTE ISCHEMIC STROKE:

As mentioned earlier, saving the ischemic penumbra is the mainstay of acute stroke care. These can be divided into two types: intravenous thrombolysis and mechanical thrombectomy.

INTRAVENOUS THROMBOLYSIS:

Several landmark trials laid the foundation stones for wider use of thrombolytic agents at various time points in acute ischemic stroke and showed the use of alteplase up to 4.5 hours of symptom onset was safe in stroke, which was later approved by the US-FDA. The patients must have only, a plain Non-Contrast CT of the brain and a blood sugar level for administering the drug (once contraindications mentioned in Table-2 are fulfilled – albeit the list is under constant revision). Alteplase is administered at a dose of 0.9mg/kg with a maximum dose of 90mg. This is divided as a bolus injection of 10% of the dose followed by an hour-long infusion of the remaining 90% of the drug.

Another drug approved in India, for use in stroke within 3 hours is Tenecteplase. TNK has a longer half-life and higher fibrin specificity than alteplase. Dose used is 0.25 mg/kg group, with no increase in bleeding risks.

Table-2: Contra-indications for intravenous thrombolysis in stroke

DEFINITE EXCLUSION CRITERIA	Significant head trauma or prior stroke in the past 3 months	
	Symptoms suggestive of subarachnoid haemorrhage	
	Arterial puncture at a non-compressible site in the past 1 week	
	History of previous intracranial haemorrhage	
	Intracranial neoplasm, arteriovenous malformation or aneurysm	
	Recent intracranial or intraspinal surgery	
	Active internal bleeding	
	Elevated blood pressure (systolic >185 mm Hg, diastolic >110 mm Hg)	
	Acute bleeding diathesis, including but not limited to:	Platelet count <100,000/mm ³
		Heparin received in the past 48 hours resulting in abnormally elevated aPTT above the upper limit of normal
		Current use of anticoagulant with INR >1.7 or PT >15 seconds
		Current use of direct thrombin or direct factor Xa inhibitors
Blood glucose <50 mg/dL		
CT demonstrates multilobe infarction (hypodensity in >1/3 of cerebral hemisphere)		



The Medical **Bulletin**

RELATIVE EXCLUSION CRITERIA	Minor or rapidly improving stroke symptoms
	Pregnancy
	Seizure at onset with post-ictal residual neurological impairments
	Major surgery or serious trauma within the previous 2 weeks
	Recent gastrointestinal or urinary tract haemorrhage in the past 3 weeks
	Recent myocardial infarction in the past 3 months
RELATIVE CRITERIA at 3-4.5 hours	Age >80 years
	NIHSS >25
	History of oral anticoagulant intake irrespective of INR

Common complications to watch out for after administration of the drug is, development of symptomatic intracranial (risk rates of 1.9% - 6.4%) or extracranial bleeds (with periodic clinical monitoring) most often as a result of reperfusion injury, angioneurotic edema and distal embolization of the clot.

If a patient develops a 4 point or greater drop in the NIHSS score (National Institute of Health Stroke Scale), during the infusion or later, and detected to have a bleed on follow up imaging – immediately stop the infusion and transfuse 10 units of cryoprecipitate or giving tranexamic acid 10-15 mg/kg IV over 15-20 minutes will be useful. Additional infusion of cryoprecipitates may be necessary if the fibrinogen level remains below 150 mg/dl.

Dr. M.V. Padma Srivastava
MD, DM, Professor, Head, Department of Neurology
Chief, Neurosciences Center, AIIMS, New Delhi