

# In Neurology

## SNIPPETS IBN NEUROLOGY

### I. PRINCIPLES OF ACUTE ISCHEMIC STROKE MANAGEMENT:

Stroke pathobiology is guided by 3-Cs. When a vessel is occluded by a “**C**lot”, the underlying neuronal tissue does not possess the ability to sustain nor regenerate in the face of sudden disruptions in blood supply. Depending on the time elapsed; a region of the brain tissue becomes permanently infarcted called the “**C**ore”. In response the brain immediately tries to restore the supply from an alternate route via compensatory autoregulatory mechanisms, through the “**C**ollaterals. These collaterals can sustain a region of the brain surrounding the core for a finite amount of time, called the “*Penumbra*”. Recanalizing a clogged artery and reperfusion of the penumbral tissue is the holy grail of stroke management.

#### BP Management in acute stroke:

In most patients, the management of elevated blood pressure poses challenges. The raised blood pressure might be maintaining the cerebral perfusion pressure in the penumbra by keeping the collaterals open. Blood pressure targets in acute stroke care although a grey zone, it is preferable to bring down the pressures to ranges of 160-200 mm of Hg systolic, and diastolic pressures to 70-100 mm of Hg. If a patient is eligible for thrombolytic therapy, then the target blood pressure before administering the drug is <185/110 mm of Hg. Various agents available to achieve these are summarized in Table-1. It is also advisable to keep the patient under strict cardiac monitoring for a period of 48 hours post stroke due to higher frequency of post stroke cardiac dysfunction.

**Table-1: Options available to lower the blood pressure in stroke**

| Drug                           | Dosing                                                                                                                                       | Onset of Action | Comments                                                                                                               |
|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------------------------------------------------------------------------------------------------------|
| <b>Intravenous Labetalol</b>   | 10-20 mg IV boluses over 1-2 minutes, repeated every 10-20 minutes, until a maximum dose of 300mg                                            | 5 mins          | Contraindicated if patient already has severe bradycardia, congestive cardiac failure, acute asthma or cocaine use     |
| <b>Intravenous Nicardipine</b> | Initiate with infusion at the rate of 5mg/hour with gradual titrations every 5-10 minutes by 2.5 mg/hour up to a maximum dose of 15 mg/hour. | 1-5 mins        | Avoid oral preparations like nifedipine, due to their unpredictable response which can worsen the final infarct volume |

|                                  |                                                                                                                                |               |                                                         |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------|---------------|---------------------------------------------------------|
| <b>Intravenous Nitroprusside</b> | Initiate infusions at a rate of 0.3-0.5 mcg/kg/min with gradual titrations of 0.5 mcg/kg/min to a maximum dose of 2 mcg/kg/min | 1-120 seconds | Watch for adverse increase in intracranial pressures    |
| <b>Intravenous Hydralazine</b>   | 10-20 mg IV bolus or IM, with repeat doses every 4-6 hours, up to a maximum dose of 40mg                                       | 10-20 mins    | Can cause reflex tachycardia and myocardial damage      |
| <b>Intravenous Esmolol</b>       | 500 mcg/kg IV bolus over 1 min, followed by infusion of 50 mcg/kg/min for next 4 mins, up to a maximum dose of 300 mcg/kg/min  | 2-10 mins     | Can cause significant hypotensive episodes              |
| <b>Intravenous Enalaprilat</b>   | 1mg IV bolus followed by 10mg after 30 mins                                                                                    | 15 mins       | Slower onset of action and hypotension are side effects |

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