Management of Hypertension within Critical Care

Introduction

Hypertension within critical care is common. It is often due to reversible factors such as poor pain control or agitation. Treatment is rarely needed.

Acute treatment should usually only be considered in:

- **Severe Hypertension:** Hypertension is severe and sustained despite treatment of reversible factors (ie deepening sedation, adequate pain relief) and institution and titration of enteral agents as per Lothian Hypertension guidance
  (Systolic persistently >180 or diastolic persistently >110)

- **Risk of End Organ Damage:** Specific BP targets are required to treat a specific clinical syndrome to prevent end organ damage (such as in a hypertensive encephalopathy or unsecured cerebral aneurysm)

Definitions

- **Severe Hypertension** Systolic persistently >180 or diastolic persistently >110

- **Hypertensive emergencies** are conditions where a sudden increase in systolic and diastolic blood pressures is associated with 'acute end organ damage' e.g.
  - hypertensive encephalopathy,
  - aortic dissection,
  - acute left ventricular failure (LVF) with pulmonary oedema,
  - acute myocardial ischaemia/infarction (AMI),
  - eclampsia,
  - acute renal failure,
  - sympathomimetic overdose

Specific Exceptions

- THIS GUIDELINE DOES NOT SPECIFICALLY APPLY TO PREGNANCY INDUCED HYPERTENSION, PRE-ECLAMPSIA OR ECLAMPSIA – See separate guideline on the intranet
- THIS GUIDELINE DOES NOT SPECIFICALLY APPLY TO TYPE B AORTIC DISSECTION - See separate guideline on the intranet
- THIS GUIDELINE DOES NOT SPECIFICALLY APPLY TO PHAEOCHROMOCYTOMA –Seek separate guidance, concomitant alpha blockade will usually be required

Management

- Identify and treat secondary hypertension causes
- Stop any medications that raise the blood pressure
- Refer to specific guidelines for management of LVF with pulmonary oedema, AMI, Type B aortic dissection, eclampsia, TOXBASE for drug related hypertension, intracranial hypertension

MANAGEMENT OF RESISTANT HYPERTENSION

- IV infusions to control blood pressure and the specified BP target should usually be discussed with the supervising consultant prior to commencement

Pharmacologic therapy

First line: Labetalol
For central administration, labetalol is administered undiluted e.g. 200mg in 40ml.
For peripheral administration, dilute to 1mg/ml in glucose 5% or sodium chloride 0.9% e.g. 500mg in 500ml.

- Initially 15mg/hour, titrated to the required level.
- Usual maximum rate is 120mg/hour, but higher doses can be used.

Second line : Hydralazine in addition to labetalol or first line if labetalol contra-indicated .

Reconstitute three 20mg vials of hydralazine, each with 1ml water for injections. Further dilute the 60mg (3ml) to 60ml sodium chloride 0.9%.

- Initial rate is 200-300 micrograms/minute; 12-18mls/hour.
- Titrated to individual blood pressure but maintenance rate usually within range of 50-150micrograms/minute; 3-9mls/hour.

Third line: **Nicardipine** or first or second line if labetalol or hydralazine contra-indicated.

Dilute 50mg to 250ml in glucose 5%. Preferably administered centrally. If given peripherally change the injection site every 12 hours to avoid irritation.

- Initial dose: Treatment should start with the continuous administration of nicardipine at a rate of 3-5 mg/hour (15-25mls/hour) for 15 minutes. Rates can be increased by increments of 0.5 or 1 mg (2.5 or 5mls) every 15 minutes. The infusion rate should not exceed 15 mg/hour (75mls/hour).

- Maintenance dose: When the target pressure is reached, the dose should be reduced progressively, usually to between 2 and 4 mg/hour, to maintain the therapeutic efficacy.

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