Anesthesia drugs

Source of copy: Anesthesia. IR

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Propofol

Dose:

= 1.5-2.5mg/Kg IV for induction

= 4-12mg/Kg/hr Infusion for maintenance of anaesthesia

(Use of opioids and benzodiazepines reduces the dose of propofol)

Preparation:

= 10mg/cc

(Once opened should be used within 12hrs)

Note:

= Pain on injection (add lidocaine to the solution)

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Ketamine

Dose:

= 4-10mg/Kg IM (induction)

= 0.5-2mg/Kg IV (induction)

= 10-50mcg/Kg/min (anaesthesia)

= 0.2-0.75mg/Kg IV (sedation & analgesia)

= 5-20mcg/Kg/min (sedation & analgesia)

Preparation:

= 50mg/cc ampoule

Notes:

= preferred drug for anaesthesia in patients with shock

= Increases sympathetic tone and thereby increases HR, BP, CO.

= Preserves airway reflexes.

Thiopental

Dose:

= 5mg/Kg IV – Induction dose

= 2-4mg/Kg IV loading dose for status epilepticus

F/b 0.2mg/Kg/min infusion; increase infusion rate every 5min by 0.1mg/Kg/min until seizure is controlled.

Preparation:

= Hygroscopic yellow powder, containing thiopental sodium stored under an atmosphere of nitrogen. 500mg or 1g vial.

Reconstitute to yield a 2.5% solution

Note:

= Extravasation of the drug may lead to tissue necrosis.

= May cause bronchospasm, laryngospasm.

= Negative inotrope, reduces cardiac output.

Etomidate

Dose:

= 0.3mg/Kg IV

Preparation:

= 20mg/10ml ampoule

Note:

= Cardiac stable induction agent.

= Causes adrenocortical suppression.

• Isoflurane

• Dose:

• - MAC of 1.17%

• - Induction: 5-8%

• - Maintenance: 0.5-3%

• Note:

• - Co-administration of N2O, benzodiazepines, or opioids lowers the MAC of isoflurane.

• - Causes cerebral vasodilation; ie, can increase ICP.

• - May induce Malignant Hyperthermia PONV.

• #هوشبری #هوشبر_استنشاقی

• Dexmedetomidine

• Dose:

• = Loading dose 1mcg/Kg IV over 10-20min

• = Maintenance dose 0.2-0.5mcg/Kg/hr

• Preparation:

• = 100mcg/ml ampoule

• Note:

• = α-2 agonist

• = Sedation with minimal respiratory depression

• = May cause hypotension and bradycardia, which can be avoided with slowly administering loading dose

• #sedation #icu

• Bupivacaine

• Dose:

- = Toxic dose : 2mg/Kg
- = Subarachnoid block:
  - == <5Kg : 1mg/Kg
  - == 5-15Kg : 0.4mg/Kg
  - == >15Kg : 0.3mg/Kg

• Preparation:

- = 0.25% solution, 0.5% solution
- = 0.5% hyperbaric solution for subarachnoid block (contains 80mg/ml of glucose)

• Note:

- = More cardiotoxic
- #local_anaesthetic

• Lidocaine

• Dose:

- = 3mg/Kg (Toxic dose w/o adrenaline)
- = 7mg/Kg (Toxic dose with adrenaline)
- = Antiarrhythmic : 1-1.5mg/Kg IV bolus. Dose can be repeated after 5-10min upto a maximum of 3mg/Kg. F/b 30-50mcg/Kg/min IV infusion.

• Preparation:

- = 2% solution with or without adrenaline.

• Note:

- = Used also for ventricular arrhythmias.
- #local_anaesthetic #Antiarrhythmic

• Succinylcholine

• Dose:

• = Infants : 2mg/Kg IV (or) 3-4mg/Kg IM

• = Older children and adults : 1-1.5mg/Kg IV (or) 3-4mg/Kg IM.

• Presentation:

• = 50mg/cc vial

• Note:

• = Contraindicated in patients with hyperkalemia, malignant hyperthermia ,trauma or burns.

• = Rapid onset of action makes it suitable in Rapid sequence intubation.

• #neuromuscular_blocker

Atracurium

Dose:

= 0.5mg/Kg loading dose

= 0.1mg/Kg maintenance dose

= 0.3-0.6mg/Kg/hr infusion

Preparation:

= 25mg/2.5cc ampoule

Note:

= May cause Bronchospasm & hypotension, secondary to histamine release.

= Metabolism is mainly by Hofmann elimination.

= The duration of action of atracurium is prolonged by hypokalaemia, hypocalcaemia, hypermagnesaemia, hypoproteinaemia, dehydration, acidosis, and hypercapnia.

#neuromuscular_blocker

• Mivacurium

• Dose:

• - Intubation dose: 0.2mg/Kg IV over 30sec

• - Maintenance dose: 0.1mg/Kg IV ≈15min interval

• - Infusion: 8-10µg/Kg/min

• Presentation:

• - 2mg/ml vial

• Note:

• - May induce bronchospasm, hypotension, tachycardia due to histamine release.

• - Use ideal body weight to calculate the dose.

• #هوشبری #شل_کننده

• Pancuronium

• Dose:

• - Loading dose : 0.1mg/Kg IV

• - Maintenance dose : 0.01-0.02mg IV

• - Infusion : 0.7-2µg/Kg/min infusion

• Presentation:

• - 2mg/cc

• - 1mg/cc

• Note:

• - Increases heart rate, mean arterial pressure, and cardiac output, due to vagal inhibition via blockade of muscarinic receptors(M2).

• هوشبری #شل_کننده#

• Rocuronium

• Dose:

- = Rapid sequence intubation: 1-1.2mg/Kg
- = Normal intubation: 0.6mg/Kg
- = Maintenance: 0.1-0.2mg/Kg
- = Infusion: 10-12mcg/Kg/min

• Preparation:

- = 10mg/cc vial

• Note:

- = Has vagolytic effect at higher doses
- #neuromuscular_blocker

• Vecuronium

• Dose:

• = Loading dose : 0.1mg/Kg IV

• = Maintenance dose : 0.02-0.03mg/Kg IV

• = Infusion : 0.8-1.3mcg/Kg/min.

• Presentation:

• = lyophilized powder 4mg ampoule.

• Note:

• = Minimal cardiovascular effect.

• #neuromuscular_blocker

• Neostigmine

• Dose:

• = 0.05-0.07mg/Kg IV

• Presentation:

• = 0.5mg/cc

• = 1mg/cc

• Note:

• = Causes bradycardia by decreasing the effective refractory period of cardiac muscle and by increasing conduction time in conducting tissue. ie, administer Anticholinergic drugs along with it.

• = Causes nausea; increases salivation, lower oesophageal and gastric tone, gastric acid output, and lower gastrointestinal tract motility.

• #Anaesthesia

• Sugammadex

• Dose:

• - Moderate block (reappearance of T2; TOF) : 2mg/Kg IV

• - Deep block (no response to TOF, 1-2 Post tetanic counts) : 4mg/Kg IV

• - Rescue reversal : 16mg/Kg IV

• Presentation:

• - 100mg/ml

• Note:

• - Used to reverse neuromuscular blockade induced by steroidal nondepolarizing neuromuscular blocking agents such as rocuronium and vecuronium.

• #هوشبری #شل_کننده

Atropine

Dose:

= 0.015-0.02mg/Kg IM or IV

= OP poisoning

==> Atropine is given by doubling the dose every 5min, until atropinization occurs. F/b infusion of 10-20% of the dose required for atropinization is given every hour.

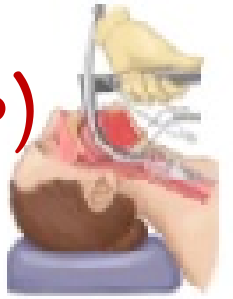
Preparation:

= 0.6mg/ml ampoule

Note:

= In low doses, atropine may produce an initial bradycardia (BezoldJarisch reflex), followed by tachycardia.

Glycopyrrolate (Glycopyrronium bromide)



- Dose:
  - = 5-10mcg/Kg
- Preparation:
  - = 0.2mg/cc ampoule (200mcg/cc)
- Note:
  - = Powerful antisialogogue.
  - = Prevents bradycardias due to the oculocardiac reflex.
  - = Long lasting bronchodilator.

• Phenytoin

• Dose:

• - Loading dose: 10-15mg/Kg IV

• - Maintenance: 4-8mg/Kg/day in 2 divided dose

• - Oral dose: 5-10mg/Kg/day in 2-3 divided doses.

• - Antiarrhythmic dose: 3.5mg/Kg

• Preparation:

• - 50mg, 100mg, 200mg, 300mg

• - 125mg/5ml syrup

• - 50mg/cc IV ampoule

• Note:

• - Avoid rapid intravenous administration as they may cause hypotension, complete heart block, ventricular fibrillation, asystole.

• - Other side effects include acne, gingival hyperplasia, hirsutism, coarsened facies, folate-dependent megaloblastic anaemia and other blood dyscrasias, osteomalacia, erythroderma, lymphadenopathy, SLE, hepatotoxicity, allergic reaction.

• #تشنج

• Diazepam

• Uses:

• -Anxiolytic, Sedative, Status epilepticus, alcohol withdrawal

• Dose:

• - 0.04-0.2mg/Kg IV

• - 0.12-0.8mg/Kg/day oral in 3-4 divided doses

• - 0.2-0.5mg/Kg PR

• Presentation:

• - 5mg/ml vial

• - 2mg, 5mg, 10mg tablets

• Note:

• - May cause a transient decrease in blood pressure and cardiac output.

Midazolam

Dose:

= 0.05mg/Kg IV

Preparation:

= 1mg/cc vial

Note:

= Produces anterograde amnesia

= Used also as an anticonvulsant

#sedation

- Lorazepam
  - Uses:
    - Anxiety
    - Seizures
  - Dose:
    - = 0.025-0.05mg/Kg IV/IM
  - Presentation:
    - = 2mg/cc vial & ampoule
    - = 4mg/cc vial & ampoule
  - Note:
    - = Can cause paradoxical reaction (increased aggression, anxiety)
    - = Has mild muscle relaxant properties.

• Levetiracetam

• Dose:

• = 7mg/Kg IV (<6 months age)

• = 10mg/Kg IV (>6 months age)

• Preparation:

• = 500mg/5cc vial

• = 1g in 100ml

• = 250mg tablet

• = 500mg tablet

• Note:

• = Reduced dose is recommended in patients with renal failure

• #seizure

Hydrocortisone

Dose:

= 1-2mg/Kg IV

Preparation:

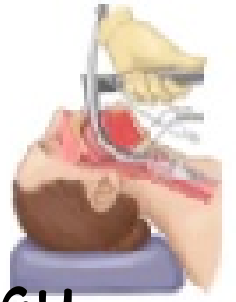
= 100mg lyophilized powder in vial

= 10mg /20mg tablet

Note:

Used in allergic reaction, anaphylaxis, asthma

• Dexamethasone



• Dose:

• = 0.5-2mg/Kg/day IV in 4 divided doses (airway edema)

• = 1-6mg/Kg IV (shock)

• = Croup : 0.6mg/Kg Bolus

• Preparation:

• = 4mg/cc

• Note:

• = 7 times more potent than prednisolone, 30 times more than hydrocortisone.

• = Consider steroid cover for perioperative patient who are on regular steroid therapy or have received high-dose steroid replacement therapy for 2 weeks in the preceding year prior to surgery

• Pheniramine Maleate (Avil)

• Dose:

• = 0.3mg/Kg IV

• Preparation:

• = 22.75mg/cc

• Note:

• = May cause drowsiness, blurred vision, dry mouth

• Prednisolone

• Dose:

• - 0.4-2mg/Kg/day PO in 3-4 divided doses.

• Presentation:

• - 5mg, 20mg, 40mg tablets.

• - 5mg/5ml, 15mg/5ml syrup

• Note:

• - Prednisolone is four times as potent as hydrocortisone and six times less potent than dexamethasone.

• - Increases the likelihood of peptic ulcer disease.

• - Chronic use can cause Cushing's syndrome.

• Methylprednisolone

• Dose:

• - 1-2mg/Kg IV

• - 30mg/Kg IV - Cerebral edema, spinal cord injury

• Presentation:

• - 40mg vial

• - 125mg vial

• - 500mg vial

• - 1g vial

• Note:

• - More often used for the management of autoimmune condition and inflammatory reactions.

Adrenaline

Dose:

= 0.01mg/Kg : asystole

= 0.01–0.1 mcg/kg/min : infusion

Preparation:

1mg/ml ampoule.

Note:

= Low doses have predominantly beta action. ie, acts on the heart

= High doses have predominant alpha action. ie, acts on blood vessels.

Noradrenaline

Dose:

= 0.01-0.4mcg/Kg/min

Preparation:

= 2mg/cc of Noradrenaline bitartrate which is equivalent to 1mg of Noradrenaline

Note:

Predominant alpha action and minimal beta action. ie, increase systolic and diastolic blood pressure by increasing systemic vascular resistance but does not increase the cardiac output

• Ephedrine

• Dose:

• – 0.1–0.2mg/Kg IV

• (Repeat dose if inadequate response)

• – <6months – 1.2mg/Kg IV

• Presentation:

• – 30mg/ml

• – 50mg/ml

• Note:

• – Has α & β adrenergic action, ie, causes vasoconstriction, positive inotropic and chronotropic actions.

• – May reduce renal blood flow by causing renal vasoconstriction.

• – Produces bronchodilation.

• Phenylephrine

• Dose:

• = 1-5mcg/Kg bolus dose

• = f/b 0.1-0.5mcg/Kg/min infusion (titrate based on response)

• Preparation:

• = 10mg/ml ampoule

• Note:

• = Causes rapid increase in the systolic and diastolic blood pressures due to an increase in the systemic vascular resistance;

• = Also causes reflex bradycardia

• Mephentermine

• Dose:

• - 0.1-0.2mg/Kg IV

• - Dose can be repeated to get the desired effect

• Presentation:

• - 30mg/cc vial

• Note:

• - Has α & β adrenergic action, ie, causes vasoconstriction, positive inotropic and chronotropic actions.

- Vasopressin
  - Dose:
    - = 0.01-0.04U/min infusion (shock) max: 0.1U/min
    - = 20U over 5min (esophageal varices bleeding)
  - Preparation:
    - = 20U/cc
  - Note:
    - = After target blood pressure has been maintained for 8 hours without use of catecholamines, taper by 0.005 units/min every hour as tolerated to maintain target blood pressure.
    - = The goal of treatment is optimization of perfusion to critical organs, however, aggressive treatment can compromise perfusion of organs; titrate to the lowest dose compatible with a clinically acceptable response.

Ondansetron

Dose:

= 0.1mg/Kg IV

Preparation:

4mg/2ml ampoule

Note:

= can cause QT prolongation. ie, avoid in patients with bradyarrhythmias

• Domperidone

• Use:

• - Nausea, vomiting.

• Dose:

• - 0.25mg/Kg PO TID; max of 30mg/day.

• - Adult: 10mg TID

• Presentation:

• - 10mg tablet

• - 5mg/5ml syrup

• - 5mg/ml Oral drops

• Note:

• - Increases serum prolactin concentration.

- Pantoprazole
  - Dose:
    - = 0.5-1mg/Kg IV
    - = 0.6-1.2mg/Kg PO
  - Preparation:
    - = 40mg lyophilized powder in vial
    - = 40mg tablet

• Cimetidine

• Uses:

• - Peptic ulcers.

• - Zollinger-Ellison syndrome.

• - Gastroesophageal reflux disease (GERD).

• Dose:

• - 20-40mg/Kg/day IV in 3-4 doses per day.

• - 5-10m/Kg IV per dose

• Presentation:

• - 100mg/cc

• Note:

• - Inhibits cytochrome P450.

- Paracetamol
  - Dose:
    - = 10-15mg/Kg IV
  - Preparation:
    - = 1g in 100ml
  - Note:
    - = Use with caution in patients with renal & hepatic dysfunction.
    - #analgesia

• Dobutamine

• Dose:

• = 5-20mcg/Kg/min (titrate based on response)

• Preparation:

• 250mg/5cc ampoule

• Note:

• = Increases the cardiac output by increasing the cardiac contractility by its action on beta 1 receptors.

• = Also increases the heart rate by its action on SA and AV node.

• Dopamine

• Dose:

• = 1-20mcg/Kg/min (titrate based on response)

• Preparation:

• 200mg/5cc ampoule

• Note:

• = Low doses (1-5 mcg/kg/min), dopamine acts on dopaminergic receptors (decreases renal vascular resistance and increases blood flow to kidneys)

• = At higher dose ranges, the drug acts via stimulation of beta & alpha-adrenergic receptors

• = 5-10 mcg/kg/min, beta stimulation predominates (positive inotropic effect)

• = More than 15 mcg/kg/min, alpha effects predominate. (Increases SVR)

- Haloperidol
  - Dose:
    - 0.05-0.1mg/Kg IV
  - Presentation:
    - 5mg/ml ampoule
  - Note:
    - preferred agent for the treatment of delirium in the critically ill adult.
    - #icu #critical_care #sedation

Ceftriaxone

Dose:

= 25mg/Kg IV BD

Preparation:

1g lyophilized powder in vial

Note:

= 3rd generation cephalosporin, broad spectrum antibiotic with both gram positive and negative coverage.

#antibiotic

• Piperacillin + tazobactam (Piptaz)

• Dose:

• - 100mg/Kg IV upto a max of 4g every 8th hourly

• - 100mg/Kg IV upto a max of 4g every 6th hourly for severe infections.

• Presentation:

• - 4.5g vial

• Note:

• - Titrate the dose in patients with eGFR <40ml/min/1.73m²

• #انتی_بیوتیک

• Amikacin

• Dose:

• = 10mg/Kg IV

• Preparation:

• = 500mg/2cc vial

• Note:

• = Aminoglycoside antibiotic.

• = Effective against gram negative organisms.

• = Nephrotoxic & ototoxic

• #antibiotic

• Metronidazole

• Dose:

• = Loading dose: 15mg/Kg IV single dose.

• = Maintenance dose: 7.5mg/Kg IV or Oral 6-8th hourly for 7-10 days

• Presentation:

• = 500mg/100ml

• Note:

• = Disulfiram-like interaction with alcohol.

• #antibiotic

• Fentanyl

• Dose:

• = 0.5-3mcg/Kg IV

• = 0.5-2mcg/Kg/hr IV infusion

• = High doses of upto 50mcg/Kg can also be used in general anaesthesia for prolonged surgeries

• Preparation:

• = 50mcg/cc ampoule

• Note:

• = can cause Wooden chest phenomenon characterized by chest wall rigidity.

• = causes respiratory depression, bradycardia.

• = produces miosis

• #opioid #analgesia

• Remifentanil

• Uses:

• - Analgesia, Sedation, Anaesthesia.

• Dose:

• - Anesthesia: 0.5-2µg/Kg/min IV infusion (or) 1-4µg/Kg IV bolus

• - Analgesia: 0.05-0.2µg/Kg IV infusion.

• Presentation:

• - White lyophilized powder, containing remifentanil hydrochloride in a glycine buffer in 1mg, 2mg, 5mg vial

• Note:

• - Context sensitive half life of Remifentanil is 3-5min and the drug effect wears off rapidly in 5-10min.

• - Chest wall rigidity (the 'wooden chest' phenomenon) may occur after the administration.

• دارو #هوشبری #مخدر#

• Morphine

• Dose:

• = 0.05-0.1mg/Kg IV

• Preparation:

• = 10mg/ml ampoule

• Note:

• = Morphine overdose is treated with Naloxan 0.01mg/Kg; dose repeated 2-3min if necessary.

• = May cause histamine release.

• #opioid #analgesia

• Pentazocine

• Dose:

• - 0.5mg/Kg IV or IM

• Presentation:

• - 30mg/cc ampoule

• Note:

• - κ opioid receptor agonist & μ opioid receptor antagonist.

• هوشبری #مخدر#

Nalbuphine

- Dose:
  - - Analgesia: 0.1-0.2mg/Kg
  - - Anaesthesia induction: 0.3-3mg/Kg over 10-15min
  - - Anaesthesia maintenance: 0.25-0.5mg/Kg
- Preparation:
  - - 10mg/ml
  - - 20mg/ml
- Note:
  - - Nalbuphine has an analgesic potency equivalent to that of morphine.
  - - Causes less nausea and vomiting, psychotomimetic effects, and dependence than does morphine.
  - - Reversed by naloxone.
  - #مخدر# هوشبری

- Tramadol
  - Dose:
    - = 1-2mg/Kg IV
  - Preparation:
    - = 50mg/ml ampoule
  - Note:
    - = Reduced doses are recommended in patients with hepatic and renal dysfunction.
    - = It is also used for postoperative shivering.
    - #opioid #analgesia

• Pethidine

• Dose:

• = 0.5-2mg/Kg Intravenous or intramuscular.

• Presentation:

• = 50mg/cc ampoule

• Note:

• = May cause hypotension due to histamine release and alpha adrenergic blockade.

• = May also cause tachycardia.

• = It is also used for post op shivering.

• #opioid #analgesic

• Buprenorphine

• Dose:

• = 2-6mcg/Kg IV every 6-8hrs

• Preparation:

• = 0.3mg/ml ampoule

• Note:

• = may cause histamine and tryptase release from lung parenchymal mast cells and may increase the PVR.

• = 25 times as potent an analgesic as morphine.

• #opioid #analgesia

• Naloxone

• Dose:

• 0.01mg/Kg; dose repeated 2-3min until desired effect.

• Presentation:

• 0.4mg/ml vial

• Note:

• Competitive antagonist at mu-, delta-, kappa-, and sigma-opioid receptors.

• Can cause severe ventricular arrhythmias.

- Diclofenac
  - Dose:
    - 1-1.5mg/Kg IV
    - 1-2mg/Kg IM
  - Presentation:
    - 75mg/ml ampoule
    - 75mg/3ml ampoule
  - Note:
    - = Non specific Cyclooxygenase enzyme (COX) inhibitor.
    - = Nephrotoxic.
    - #analgesia

• Isoprenaline

• Dose:

• 0.1-1 mcg/Kg/min IV infusion

• Presentation:

• 2mg/ml ampoule

• Note:

• = Increases automaticity and enhances AV nodal conduction.

• = Can predispose the patient to arrhythmias.

• = Has positive inotrope and chronotrope, and thus causes an increase in the cardiac output and systolic blood pressure.

• #Cardiac

- Tranexamic acid
  - Dose:
    - 10-30mg/Kg IV
    - Infusion: 2mg/Kg/hr
  - Presentation:
    - 500mg/5cc ampoule
  - Note:
    - = Antifibrolytic agent; inhibits the breakdown of fibrin clots, thereby promoting hemostasis and minimizing blood loss.
    - = Significantly reduces the need for blood transfusion in surgeries.

• Furosemide (Lasix)

• Dose:

• = 0.5-1mg/Kg for neonates

• = 1-2mg/Kg for infants

• = 20-40mg IV. Watch for 2hrs before repeating the dose.

• Preparation:

• = 10mg/cc

• Note:

• = Hypokalaemia, hypocalcaemia, hypomagnesaemia, and metabolic alkalosis may occur after the administration of furosemide

- Mannitol
  - Dose:
    - = 0.25-0.5g/Kg IV : For raised ICP
    - = 0.5-1g/Kg IV : Diuretic dose
  - Presentation:
    - = 10% solution - 10g in 100ml
    - = 20% solution - 20g in 100ml
  - Note:
    - = Osmotic diuresis
    - = May cause rebound increase in ICP

• Calcium gluconate

• Dose:

• - 10-30mg/Kg IV (Hyperkalemia, Hypocalcemia, Hypermagnesemia)

• - 5-20mg/Kg/hr IV infusion

• - Beta blocker toxicity & Calcium channel blocker toxicity : 60mg/Kg IV f/b 60-150mg/Kg/hr infusion

• Presentation:

• - 10% solution ie, 1g of calcium gluconate in 10ml or 93mg of elemental calcium in 10ml.

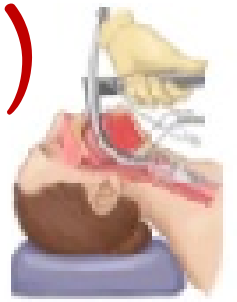
• Note:

• - In Beta blocker and calcium channel blocker toxicity maintain calcium level twice the normal level.

• - Extravasation of drug can cause tissue necrosis.

• #icu

• Magnesium sulphate (MgSO4)



• Dose:

• = Bronchospasm : 25-50mg/Kg IV

• = Eclampsia :

• ==> Intravenous: 4-6g loading dose to be given over 30min

• F/b 1-2g every hour for 24hrs.

• ==> Intramuscular: 5g in each buttock (total 10g) as loading dose

• F/b 5g every 4hrs in alternating buttock.

• Preparation:

• = 250mg/ml ampoule (or) 500mg/ml ampoule

• Note:

• = Monitor serum concentration.

• = Loss of deep tendon reflexes is a useful clinical sign of impending toxicity.

• Potassium chloride (KCl)

• Dose:

• = K+ deficit = (4-actual K) x Body weight(Kg) x 0.4

• Presentation:

• = 2mEq/ml

• Note:

• = Do not correct K+ at rate higher than 20mEq/hr

• Sodium bicarbonate ($NaHCO_3$)

• Dose:

• = Dose(mmol) = [base deficit(mEq/l) x body weight(kg)]/3

• = Administer half the dose and reassess the patient using ABG.

• Presentation:

• = 8.4% solution contains 1mEq/ml

• Note:

• = Over correction of an acidosis will result in a metabolic alkalosis, which may result in myocardial dysfunction and peripheral tissue hypoxia.

• = Metabolic alkalosis also causes respiratory depression.

• #icu #critical_care #general_medicine

• Sodium nitroprusside

• Dose:

• = 0.5-6µg/Kg/min IV infusion

• Presentation:

• = 50mg/2ml vial

• = Need to be protected from light.

• Note:

• = Causes a reversible decrease in PaO_2 due to attenuation of hypoxic pulmonary vasoconstriction; ie. an increased inspired oxygen concentration may be necessary.

• = Infusion rate more than 4µg/Kg/min can predispose the patient to cyanide toxicity

• = Cyanide toxicity ℞ : administration of sodium thiosulfate or dicobalt edetate.

• #icu #critical_care

• Salbutamol

• Dose:

• - 15µg/kg IV over 10min

• Preparation:

• - 0.5mg/ml ampoule

• - 1mg/ml ampoule

• Note:

• - At high doses, the β-1 actions of the drug lead to positive inotropic and chronotropic effects.

• - At lower doses, the β-2 effects predominate and cause a decrease in the peripheral vascular resistance, leading to a decrease in the diastolic blood pressure.

• - Decrease the plasma potassium concentration by causing a shift of the ion into cells.

• Aminophylline

• Dose:

• = 5mg/Kg IV loading dose

• = 0.5mg/Kg/hr infusion

• Preparation:

• = 25mg/ml

• Note:

• = has mild positive inotropic and chronotropic effects, producing an increase in the cardiac output and a decrease in the systemic vascular resistance.

• = Aminophylline causes bronchodilatation, leading to an increase in the vital capacity.

• = increases the sensitivity of the respiratory centre to Co2 & increases diaphragmatic contractility.

• = inhibits hypoxic pulmonary vasoconstriction and necessitates the administration of oxygen during therapy.

• = Aminophylline is arrhythmogenic.

• Sildenafil

• Dose:

• = 0.25-2mg/Kg IV TDS or QID

• = Infusion 0.4mg/Kg over 3hrs f/b 1.6mg/Kg/day

• Presentation:

• = 0.8mg/ml

• Note:

• = Pulmonary vasodilator.

• = Augments the vasodilatory and antihypertensive effects of nitrates and can produce profound hypotension leading to decreased coronary perfusion and myocardial infarction.

• Isoprenaline

• Dose:

• 0.1-1 mcg/Kg/min IV infusion

• Presentation:

• 2mg/ml ampoule

• Note:

• = Increases automaticity and enhances AV nodal conduction.

• = Can predispose the patient to arrhythmias.

• = Has positive inotrope and chronotrope, and thus causes an increase in the cardiac output and systolic blood pressure.

• #Cardiac

• Nitroglycerin (NTG)

• Dose:

• = 0.5-5mcg/Kg/min (titrated to the response)

• Preparation:

• = 25mg/5cc

• Note:

• = Acts as a vasodilator, primarily on veins, reducing preload and myocardial oxygen demand.

• = Side effects may include headache, hypotension, and reflex tachycardia.

• = Contraindicated in patients with increased intracranial pressure or severe anemia.

• Enalapril

• Dose:

- – Oral: 0.08mg/Kg/day in 2 divided doses. Gradually increase the dose upto 0.5mg/Kg/day until desired effect.
- – IV: 0.01–0.02mg/Kg/day in 2 divided doses.
- – Hypertensive crisis: 0.05–0.1mg/Kg IV.

• Presentation:

- – Tablet: 2.5mg, 5mg, 10mg, 20mg
- – IV: 1.25mg/cc ampoule

• Note:

- – Can cause dry cough due to accumulation of bradykinin.
- – Monitor renal function and electrolytes.

• Hydralazine

• Uses:

• – Hypertension

• – Heart failure

• – Hypertensive crisis in pregnancy

• – Pheochromocytoma

• Dose:

• – Infants: 0.1–0.5mg/Kg IV Q6h or Q8h

• – Children & adult: 0.15–0.2mg/Kg IV Q6h or Q8h

• – Oral: 0.75–1mg/Kg/day Q6h or Q12h

• – 0.4mg/Kg IV 10min prior to induction of anaesthesia can be administered to obtund the pressor response to intubation.

• Presentation:

• – Intravenous: 20mg/cc

• – Tablet: 10mg, 25mg, 50mg, 100mg

• Note:

• – Acts by direct vasodilator action on the arterial smooth muscle causing reduction in systemic vascular resistance.

• – Causes reflex tachycardia.

• – Drug crosses the placenta when administered in pregnancy.

Labetalol

Dose:

= 0.3-1mg/Kg IV

= 0.5-1mg/Kg/hr IV infusion

Preparation:

= 20mg/4cc ampoule

Note:

= Watch for postural hypotension.

= Decreases systolic & diastolic BP, renal vascular resistance (increase renal blood flow), coronary vascular resistance.

#beta_blocker

Esmolol

Dose:

= 500-1000mcg/Kg loading dose

= f/b 50mcg/Kg/min infusion increased upto 300mcg/Kg/min

Preparation:

= 10mg/ml vial

Note:

= Rapid onset, shorter duration of action

= Cardioselective beta blocker

• Propranolol

- Uses:
  - – Hypertension
  - – Angina
  - – Tachydysrhythmias
  - – Essential tremor
  - – Anxiety
  - – Thyrotoxicosis, thyroid storm
  - – Hypertrophic obstructive cardiomyopathy
  - – Phaeochromocytoma
  - – Myocardial infarction
  - – Migraine
- Dose:
  - – Oral: Initiate at 1mg/Kg/day in 2 to 3 divided dose. Titrate upto max 4mg/Kg/day
  - – Intravenous: 0.01–0.1mg/Kg slow IV over 10min
- Presentation:
  - – Tablet: 10mg, 20mg, 40mg, 80mg
  - – IV: 1mg/cc
- Note:
  - – Negatively inotropic and chronotropic.
  - – Propranolol decreases plasma renin activity and suppresses aldosterone release.
  - – Prevents the peripheral conversion of levothyroxine to triiodothyronine.

Metoprolol

Dose:

= 0.05-0.1mg/Kg

= Dose can be repeated after 5min based on response.

Preparation:

= 5mg/5cc ampoule

Note:

= Cardioselective beta blocker.

#beta_blocker

Adenosine

Dose:

= Adult : 6mg -> 12mg

(Rapid intravenous bolus, followed by saline flush)

= Pediatric : 0.1mg/Kg -> 0.2mg/Kg -> 0.3mg/Kg

Preparation:

= 3mg/ml

Note:

= Depresses the SA & AV nodal conduction.

= Half life is only < 10 sec.

#cardiac #Antiarrhythmic

• Diltiazem

• Uses:

• - Hypertension, SVT, Atrial fibrillation, Atrial flutter.

• Dose:

• - 0.5-2mg/Kg PO 6th hourly

• - PSVT, Atrial fibrillation/flutter: 0.25mg/Kg IV over 2min. Repeat 0.35mg/Kg after 15min if inadequate response.

• Presentation:

• -60mg, 90mg, 120mg, 180mg, 240mg, 300mg tablet.

• - 5mg/cc vial.

• Note:

• - Diltiazem reduces AV nodal conduction.

• - Potent peripheral & coronary arterial vasodilator, thereby reduces systemic & pulmonary vascular resistance.

• Levosimendan

• Dose:

• = Loading dose : 6-12mcg/Kg (10mcg/Kg) IV over 10min

• = Maintenance dose : 0.1-0.2mcg/Kg/min IV

• Presentation:

• = 12.5mg lyophilized powder in vial

• Note:

• = Increase myocardial contractility via increased calcium sensitivity

• = Causes coronary and peripheral vasodilatation

• = Not preferred for more than 24 hours.

• #critical_care #cardiac #icu

Amiodarone

Dose:

= 5mg/Kg over 15min

= f/b 1mg/Kg/hr for 6hrs

= f/b 0.5mg/Kg/hr for 18hrs

Preparation:

= 150mg/3cc

Note:

= Reduces heart rate by reducing AV nodal conduction.

= watch for hypotension, AV block, cardiovascular collapse.

= used as the first line medical management of Vt

• Streptokinase

• Dose:

• = MI : 15,00,000 IU administered over 1 hour

• = Pulmonary embolism : 2,50,000 IU administered over 30min; f/b 1,00,000 IU per hour for 24 hours.

• Presentation:

• = 15,00,000 IU lyophilized powder in vial

• Note:

• = Greatest benefits are observed when administered within 1 hour of symptoms.

• = Hypotension, reperfusion arrhythmias are to be watched for.

• = Pyrexia, allergic reaction are common.

• #cardiac

• Dantrolene sodium

• Dose:

• - Malignant hyperthermia: 2.5mg/Kg IV (1-10mg/Kg)

• F/b 1mg/Kg IV 6th hourly for 24hours.

• - Prophylaxis: 4-8mg/Kg/day IV in 3-4 divided dose

• Presentation:

• - 20mg lyophilized powder in vial

• - 250mg lyophilized powder in vial

• Note:

• - Primary drug of therapy for malignant hyperthermia.

• - Inhibits calcium release from the sarcoplasmic reticulum, preventing sustained muscle contraction.

• - Can cause hyperkalemia.

• #هیپرترمی بدخیم

• Albendazole

• Dose:

• - 15mg/Kg/day BD dose PO

• - Max 800mg/Kg/day

• Presentation:

• - 200mg/5ml syrup

• - 400mg tablet

• Note:

• - Administer along with high fat diet to improve the drug bioavailability.

• #worms

• Levothyroxine

• Uses:

• - Hypothyroidism

• - Pituitary TSH suppression

• - Myxedema coma

• Dose:

• - Adults: initial dose of 1.6 mcg/kg/day PO (titrate based on TSH levels)

• - Children: 4-10 mcg/kg/day PO (titrate based on TSH levels)

• - Myxedema Coma: 300-500 mcg IV initially, then 50-100 mcg IV daily

• - Intravenous dosage is 50-75% of oral dosage.

• Presentation:

• -Tablet: 25 mcg, 50 mcg, 75 mcg, 88 mcg, 100 mcg, 112 mcg, 125 mcg, 137 mcg, 150 mcg, 175 mcg, 200 mcg, 300 mcg

• - Injection: 20mcg/cc, 40mcg/cc, 100mcg/cc

• Note:

• - Levothyroxine is a synthetic form of thyroxine (T4), a thyroid hormone that regulates metabolism, energy generation, and growth.

• - Dosing should be individualized based on clinical response and laboratory parameters.

• - Take on an empty stomach, 30-60 minutes before breakfast, for optimal absorption.

• - Monitor thyroid function tests regularly to ensure appropriate dosing.

• - Be cautious in patients with cardiovascular disease due to the risk of exacerbation of symptoms.

• Insulin

- Dose:
  - - Type 1 Diabetes:
    - = Total daily dose: 0.4-1 U/Kg/day
    - = Basal dose: 40-50% of TDD
    - (Intermediate acting- NPH or Long acting- Glargine, Detemir)
    - = Prandial dose: 50-60% of TDD administered before meal time.
    - (Short acting- Regular insulin or Rapid acting- Lispro, Aspart, Glulisine)
  - - Type 2 Diabetes:
    - = Initial dose: 0.1U/Kg before every meal. Titrate the dose by 10-15% to achieve glucose target.
  - - Diabetic ketoacidosis:
    - = Bolus: 0.1U/Kg
    - = Infusion: 0.1U/Kg/hr
    - Target serum glucose drop by 10%
    - = Reduce the insulin dose to 0.02-0.05U/Kg/hr when serum glucose level reach 200mg/dl.
    - = Administer dextrose containing IV fluid to maintain serum glucose 150-200mg/dl
  - - Sliding scale:
    - = 140-180mg/dl : 0.05U/Kg
    - = 180-250mg/dl : 0.1U/Kg
    - = 250-300mg/dl : 0.15U/Kg
    - = >300mg/dl : 0.2U/Kg
- Presentation:
  - - Rapid acting - Aspart, Lispro, Glulisine
  - - Short acting - Regular insulin
  - - Intermediate - NPH
  - - Long acting - Glargine, Detemir
- Note:
  - - Target serum glucose of 140-180mg/dl for critically ill patients.

Fresh frozen plasma (FFP)

- Uses:
  - – Coagulopathy due to liver disease.
  - – Disseminated intravascular coagulation (DIC).
  - – Warfarin reversal.
  - – Management of bleeding in coagulation factor deficiencies.
  - – Burn patients.
- Dose:
  - – 15–20ml/Kg
  - – Transfusion rate : 2–5ml/Kg/hr
- Presentation:
  - – 1 Unit ~ 250ml
- Coagulation Factors:
  - – Fibrinogen (Factor I)
  - – Prothrombin (Factor II)
  - – Factors V, VII, VIII, IX, X, XI, XIII
  - – Von Willebrand Factor (vWF)
- Anticoagulant Proteins:
  - – Protein C
  - – Protein S
  - – Antithrombin
- Immunoglobulins (Antibodies)
- Albumin
- Note:
  - – FFP should be ABO compatible with the recipient, thou Rh compatibility is less critical.


Ca