

KETAMINE

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Abstract—Ketamine is an intravenous

/intramuscular/oral/epidural anaesthetic drugs .it has significant analgesic effect among all the general anaesthetic ketamine doesn't depress cardiovascular and respiratory system .it is also a sedative drug .it is a drug for pain management .ketamin raises blood pressure :

So it is also a very useful drug In severe hypotension /shock.it is a central nervous system depressant

Ketamine separate perception from sensation .other drug in this class is nitrous oxide.

Keywords— Anaesthesia , Sedative , analgesics , shock, sever hypotension , cancer.

I. INTRODUCTION

Ketamine (ketalar) is a phencyclidine derivative. It is different from most other induction agents in following :It has significant analgesic effect, Does not depress the cardiovascular system, Does not depress respiratory system, Can be given IM, IV, orally .But it is associated with some embarrassing psychological side effects and this is the reason because of which it is not used routinely.

Clinical uses:

- 1) Induction of anaesthesia in – (a) Hypovolemic patient (b) Bronchospastic and reactive airway disease (c) IM Induction in children with difficult IV access.
- (2) Maintenance of general anaesthesia
- (3) For analgesia and sedation
- (4) Supplementation of regional anaesthesia
- (5) major depression

Contraindication: Hypersensitivity, eye-injury, psychotic disorder, hypertension, raised intracranial pressure, raised intraocular pressure, aneurysm, angina, MI, convulsions.

Pharmacokinetics:

Ketamine is metabolized in liver and is excreted in liver .

• Onset of action

- a) IV < 30 Seconds
- b) IM/Rectal 3-4 minutes

• Peak effects

- a) IV 1 minute
- b) IM /Rectal 5-20 minutes
- c) Orally 30 minutes

• Duration of action

- a) IV 5 -15 minutes
- b) IM/ Rectal 12 -25
- c) Epidural 4 hours

Pharmacology:

CNS (central nervous system):

The anesthetized state has been termed dissociate anesthesia because who receive ketamine appear to be in a cataleptic state, they have profound analgesia but keep their eyes open and maintain many reflexes. Ketamine increases cerebral metabolism, CMRO₂ CBF and ICT because of its excitatory CNS effects.

CVS (cardiovascular system):

Ketamine stimulates CVS system and is associated with increases in BP (blood pressure), heart rate and cardiac output this increases myocardial work and oxygen consumption .

• It is myocardial depressant by inhibiting calcium channels.

• Ketamine is preferred drug in patients with right to left shunting.

• Due to increased noradrenaline ketamine causes transient dysrhythmias.

Respiratory system:

Only high dosage can produce apnea. it is a bronchodilator .it can be used to treat status asthmaticus unresponsive to conventional therapy.

Eyes: After ketamine administration, pupil dilate moderately and nystagmus occurs. there is transient increase in intraocular tension.

Other effects:

Ketamine increases the chances of nausea and vomiting. there is increase in salivation too, which can be prevented by prior administration of atropine or glycopyrrolate. Ketamine increases skeletal muscle tone. nonpurposeful movement may be seen in light ketamine anesthesia.

Site of action:

Primary site of action is thalam oneocortical projection. Ketamine inhibits cortex (unconsciousness) and thalamus (analgesia) and stimulates limbic system (emergence reaction and hallucinations) .It also acts on medullary reticular formation and spinal cord.

Mechanism of action: The main mechanism by which Ketamin exerts its effect is by inhibiting N methyl D aspartate (NMDA) receptors .Interaction through opioid (μ) receptors has also been postulated .

Dosage:

- Sedative /analgesia
- a) IV 0.2 – 0.8 mg /kg
- b) IM 2 – 4 mg/kg
- c) Orally 5 -6 mg/kg

• Induction

- a) IV 1-2.5 mg/kg
- b) IM Recatl 5 -10 mg/kg
- Infusion 15 -80 mcg/kg/min
- Epidural/ caudal 0.5 mg/kg

Dilute in saline or local anaesthetics 1 ml/kg

- Major depression 0.5mg/kg and followed by 0.2 mg/kg IV but this is under trial.

Drug Interaction: IT causes convulsion with aminophylline, muscle relaxant as atracurium, pancuronium, increase the effect of ketamine, ketamine causes cardiac toxicity with thyroxine.

Special cautions: Pregnenancy, childhood and old patients, with alcohol, liver diseases, renal diseases and glaucoma, rapid iv never should be given because it causes dysnea, before giving ketamine cardiac test as ecg,enzyme, ecocardiography should be done.

Adverse effects:

Cardiac depression, hallucination, seizures, errational behaviour, cardiac arrhythmias, hypertension, ict, iop, nausea and vomiting, headache, diplopia, difficulty in breathing, confusion, loss of appetite, increased muscle tone

CONCLUSION

In appropriate dosage ketamin can be used as an analgesic , sedative, anaesthetic , amnesic ,anti-depressant and anti hypotensive.

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