Thiopental Injection B.P.

**COMPOSITION**

Powder for Injection:
- Vials containing sterile powder of thiopental sodium 0.5 gm for extemporaneous preparation of 2.5% solution.
- Vials containing sterile powder of thiopental sodium 1 gm for extemporaneous preparation of 5% solution.

**USES**

Administered intravenously, Thiopental Injection B.P. produces general anaesthesia of short duration. Thiopental Injection B.P. is indicated for the induction of general anaesthesia of short duration; it is also used as an adjunct for control of convulsive disorders of various aetiology, including those caused by local anaesthetics.

**Other Information:**

Although bound to plasma proteins, it rapidly crosses the blood-brain barrier and reaches maximum concentration in the brain within 30 seconds of injection. It is slowly metabolised by the liver. Only a small proportion of the active drug is excreted in the urine.

**Pharmacotherapeutic Group**

Barbiturates, Plain
ATC Code: N01AF

**DOSAGE AND METHOD OF ADMINISTRATION**

Thiopental Injection B.P. is administered intravenously as a 2.5% w/v (500 mg in 20 ml) solution. On occasion it may be administered as a 5% w/v solution (500 mg in 10 ml).

The obtained solution for intravenous injection should be used immediately; any remaining portion of the content should be discarded. Thiopental sodium injection is usually administered as a 2.5% solution. The content of the vial should be dissolved in 20 ml Water for injection.

**Use in Anaesthesia**

Normal dosage for the induction of anaesthesia is 100 mg to 150 mg injected intravenously over 10 to 15 seconds. If necessary a repeated dose of 100 mg to 150 mg may be administered after one minute. No fixed dosage recommendations for the intravenous injection can be given, since the dosage should be carefully adjusted according to the patient’s response.

Factors such as age, sex and weight of the patient should be taken into consideration. Thiopental sodium reaches effective concentrations in the brain within 30 seconds and anaesthesia is normally produced within one minute of an intravenous dose.

**Adults**

100 mg to 150 mg intravenously over 10 to 15 seconds, usually as a 2.5% w/v solution. A repeated dose of 100 mg to 150 mg may be given after one minute.

The intravenous injection should be given slowly and the amounts given titrated against the patient’s response to minimise the risk of respiratory depression or the possibility of overdosage. The average dose for an adult of 70 kg weight is roughly 200 mg to 300 mg (8 ml – 12 ml of 2.5% w/v solution) with a maximum dose of 500 mg.

**Children**

2 to 7 mg/kg bodyweight, intravenously over 10 to 15 seconds, normally as a 2.5% w/v solution. A repeated dose of 2 to 7 mg/kg body weight may be given after one minute. The dose is 2 to 7 mg/kg body weight based on the patient’s response. The dose for children should not exceed 7 mg/kg body weight.

**Elderly**

Reduced adult doses are recommended.

**Use in Convulsive States**

75 mg to 125 mg (3 ml to 5 ml of 2.5% w/v solution) should be given as soon as possible after the convulsion begins. Further doses may be required to control convulsions following the use of a local anaesthetic. Other regimens, such as the use of intravenous or rectal diazepam, may be used to control convulsive states.

**CONTRAINDICATIONS**

- A history of acute intermittent porphyria is an absolute contraindication to any barbiturate.
- Respiratory obstruction, acute asthma, severe shock and dystrophia myotonica.
- Known hypersensitivity to barbiturates including thiopental.
- Care should be exercised with severe cardiovascular diseases, severe respiratory diseases and hypertension of various aetiology.

**SPECIAL WARNINGS AND SPECIAL PRECAUTIONS**

- Keep resuscitative and endotracheal intubation equipment and oxygen readily available. Maintain patency of the airway at all times.
- Special care is required in patients with the following conditions: hypovolaemia; severe haemorrhage; burns; dehydration; severe anaemia; cardiovascular disease; status asthmaticus; severe liver disease; myasthenia gravis and muscular dystrophies; adrenocortical insufficiency even when controlled by cortisone; cachexia and severe toxæmia; raised intra-cranial pressure; raised plasma potassium; metabolic disorders, e.g. thyrotoxicosis, myxoedema and diabetes.
- Thiopental may precipitate acute circulatory failure in patients with cardiovascular disease, particularly constrictive pericarditis.
- Thiopental can cause respiratory depression and a reduction in cardiac output. Headache is also reported with the use of barbiturate anaesthetics.

**Reduced doses are recommended in shock, dehydration, severe anaemia, hyperkalaemia, toxæmia, myxoedema or other metabolic disorders. Thiopental sodium is metabolised primarily by the liver, so doses should be reduced in patients with hepatic impairment. Reduced doses are required in the elderly and in patients heavily premedicated with narcotics and other central depressants. Thiopental has been shown to interact with sulphafurazole. Reduced initial doses may be required to achieve adequate anaesthesia, while repeated doses may also be necessary to maintain anaesthesia. Increased doses of thiopental may be necessary in patients who have either a habituation or addiction to alcohol or drugs of abuse. Under these circumstances it is recommended that supplementary analgesic agents be used.**
The jaw drops rapidly after starting the injection and must be supported, since it is imperative to keep the airway open. The patient should always be in recumbent position to avoid cerebral ischaemia. If Thiopental Injection BP is used in dental practise, a mouth prop should be inserted before injection is commenced. The throat must be properly packed to prevent access of blood, etc., to the larynx and the dose employed should not exceed 250 mg; otherwise recovery will be delayed. Facilities for intubation and administration of oxygen under positive pressure must always be available.

Avoid extravasation or intra-arterial injection

To prevent accidental intra-arterial injection the site of administration should be palpated carefully and after insertion of the needle a small volume of a blood should be withdrawn into the syringe to observe its colour. Intra-arterial injection causes severe arterial spasm with intense burning pain in the hand and fingers. In the case of accidental intra-arterial injection of thiopental the needle should be left in-situ so that an injection of an antispasmodic, such as papaverine or prilocaine hydrochloride may be given. Anticoagulant therapy may also be started to reduce the risk of thrombosis.

Pregnancy & breastfeeding

Thiopental readily crosses the placental barrier and is excreted in human milk. Therefore, breastfeeding should be temporarily suspended or breast milk withdrawn before the induction of anaesthesia. Safety of use in pregnancy is not established. Thiopental injection should be given to pregnant woman only if it clearly needed and the expected benefits outweigh any potential risks. Total dose in pregnancy should not exceed 250 mg.

Effects on ability to drive and use machinery

Postoperative vertigo, disorientation and sedation may be prolonged; thus out-patients given thiopental should be advised not to drive or use machinery, especially within the first 24 to 36 hours.

ADVERSE EFFECTS

Coughing, sneezing or laryngeal spasm may occur during induction. For this reason it is not advised to use thiopental as a single agent for peroral endoscopy. Extravasation causes pain and possible tissue necrosis. This can be relieved by application of an ice pack and local injection of hydrocortisone. Thrombophlebitis may result from the use of 5% solution.

Skin rashes, fever, arthralgia and weakness are rare side effects. Allergic reactions and hypersensitivity have been documented. Bronchospasm, respiratory depression and myocardial depression or cardiac arrhythmias may occur.

INTERACTIONS WITH OTHER DRUGS AND OTHER FORMS OF INTERACTION

Thiopental has been shown to interact with sulphafurazole. It should be noted that thiopental will interact with beta-blockers and calcium antagonists causing a fall in blood pressure. The sedative properties of antipsychotics and anxiolytics may be potentiated by thiopental.

OVERDOSAGE

Respiratory depression during thiopental anaesthesia should be treated by artificial ventilation with oxygen as should cardiac arrhythmia associated with anaemia or hypercarbia. A fall in blood pressure is often noted initially, while overdose may lead to circulatory failure. Apnoea or serious respiratory depression must be treated by controlled respiration with oxygen. Cardiovascular collapse requires immediate lowering of the patient’s head; if the blood pressure falls to rise a presor agent or plasma expander should be given. If the heart stops immediate massage should be given.

PHARMACOLOGICAL PROPERTIES

Thiopental sodium for injection is an ultrashort acting depressant of the CNS which induces hypnosis and anaesthesia, but not analgesia. It produces hypnosis within 30 to 40 seconds of intravenous injection. Recovery after a small dose is rapid with some somnolence and retrograde amnesia.

Although approximately 80% of the drug in the blood is bound to plasma protein, it rapidly crosses the blood brain barrier and reaches maximum concentration in the brain within 30 seconds of injection. It is slowly metabolised by the liver. The metabolites of thiopental excreted mostly via kidney are pharmacologically inactive.

PHARMACEUTICAL PARTICULARS

Reconstitution

Dissolve in 20 ml of Water for Injection. Use immediately after preparation. Aqueous solutions of thiopental sodium are strongly alkaline: a 2.5% solution has a pH about 10.5. The solution is incompatible with acids, acidic salts and oxidising agents. Reconstituted solutions are not stable upon storage. The solution decomposes on standing, resulting in cloudiness, precipitation or crystallisation. Solutions should be freshly prepared and used immediately. Use reconstituted solution only if it is clear, free from precipitate and not discoloured. Any portion of the contents remaining should be discarded.

Shelf Life

3 years

Special Precautions for Storage

Store below 25°C. Remove solution from vial immediately before use. Dissolve in 20 ml of Water for Injection. Use immediately after preparation. Any remaining portion of the contents should be discarded.

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