Mannitol 20% Intravenous infusion

Mannitol (osmolol) 20% is a clear, almost colorless and sterile solution. Each 100ml of mannitol 20% contains mannitol 20g.

It has no antimicrobial agents. Mannitol is a 6-carbon sugar alcohol that is prepared commercially by reducing dextrose.

Mannitol hinders tubular reabsorption of water and facilitates excretion of sodium and chloride by increasing the osmolarity of the glomerular filtrate.

This infusion is administered parenterally. It works by raising the osmotic pressure of the plasma, thus drawing water out of the body tissues and produces an osmotic diuresis.

Uses of Mannitol

Mannitol is a principally used intravenous infusion as an osmotic diuretic to preserve renal function in acute renal failure and also to reduce raises intracranial and intraocular pressure.

Mannitol is also used as an irrigating solution to prevent hemolysis and hemoglobin build up during transurethral prostatic resection.

It is useful in the management of acute drug poisoning where a route of elimination is the kidney.

Besides these indications, it is also used in symptomatic relief of edema, reperfusion injury, termination of pregnancy and bowel preparation.

Dosage

The adult dose of mannitol ranges from 50-100grams intravenous infusion. The rate of administration is adjusted to maintain a urine flow of at least 30-50ml/hr.

The total dosage, concentration and the rate of administration depend on the fluid requirement, urinary output and the severity of the condition being treated.

For termination of pregnancy 50mg of mannitol that is 250 mls of 20%, mannitol is instilled into the amniotic cavity which induces termination.

In renal insufficiency, the dose in adults is 50 to 100g and in children is 2g/kg body weight or 60g/sq meter of the body surface area administered over a period of 2-6 hours.

In cerebral edema, elevated intracranial pressure, elevated intraocular pressure and glaucoma: an adult dose is 1.5 to 2g/kg body weight over a period of 30-60 minutes. In children its 1-2g/kg or 30 to 60g/sq meter body surface area over 30-60 minutes.

When used as adjunctive therapy to remove toxic substances the dosage in adults is 50-200g of 20% mannitol administered at a rate adjust to maintain a urine flow of at least 100-500 ml/hr. In children, it is 2g/kg body weight or 60g/sq meters body surface area.

Precautions

Careful monitoring of the rate of infusion is necessary to avoid fluid and electrolyte imbalance and circulatory overload.

The infusion should be discontinued if the patient develops signs of progressive renal dysfunction, heart failure, or pulmonary congestion.

Mannitol should not be administered with whole blood.

Warning

The infusion should be stopped immediately if rigor arises from any reason during the process. Do not use if the solution is cloudy, contains particles or after the expiry date.

Adverse effects

The most common side effect associated with its use is fluid and electrolyte imbalance including circulatory overload, acidosis at high doses.

Other effects include; nausea, vomiting, headache, thirst, dizziness, fever, tachycardia, chest pain, hyponatremia, dehydration, blurred vision, urticaria, and hypertension or hypotension.

Contraindications

Mannitol intravenous infusion is contraindicated in patients with pulmonary edema or congestive cardiac failure.

It is also contraindicated during inadequate urine flow, dehydration or acidosis, intracranial bleeding and in patients with renal failure unless a test is done has produced a diuretic response.

Pregnancy and lactation

The safety of mannitol during pregnancy has not been established. There is no information available on the excretion of mannitol in the breast milk and should be administered after weighing between the benefits and risks ratio.