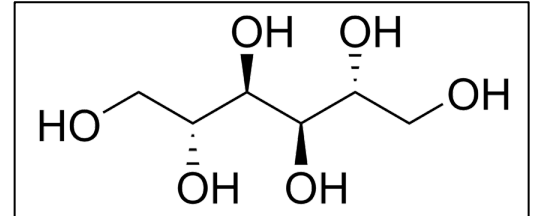


Mannitol

Anesthetic Pearls: Anesthetic Implications and Management of Mannitol

Mannitol is a six-carbon sugar that acts as an osmotic diuretic. It is completely filtered at the level of the glomerulus and none of the molecule is reabsorbed from the renal tubules. The resulting increase in renal tubular fluid osmolarity causes the excretion of water, sodium, chloride, and bicarbonate. Mannitol also increases plasma osmolarity (it does **not** enter cells) and draws fluid from the intracellular to the extracellular space.



Clinical Uses:

- Acute renal failure (cardiovascular surgery, extensive trauma, surgery in the presence of jaundice, and hemolytic transfusion reactions).
- Differential diagnosis of acute oliguria (urine output is increased by Mannitol when the cause of acute oliguria is decreased intravascular fluid volume).
- Treatment of increased intracranial pressure reduction of intraocular pressure

Side Effects:

- Fluid overload (pulmonary edema) in patients whose oliguria is secondary to cardiac failure
- Hypovolemia may follow excessive excretion of water and sodium.
- Damaged renal tubular epithelium (nephrotoxins and prolonged renal ischemia) is **not** impermeable to Mannitol and diuretic effect may be lost.
- Mannitol diuresis does **not** effect GFR and therefore does not alter the elimination rate of the non-depolarizing muscle relaxants because they are dependent on glomerular filtration for elimination.

