

TURP syndrome  
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pathophysiology

- excess irrigating fluid causes an increase in total body water which is often associated with:
  - (i) a small decrease in plasma osmolality
  - (ii) hyponatraemia (as glycine, sorbitol or mannitol reduces the sodium component of the ECF)
  - (iii) increased osmolar gap

- when glycine is used, other features include:
  - (i) hyperglycinaemia (up to 20mmol/L; normal is 0.15-0.3mmol/L)
  - (ii) hyperserinaemia (as serine is a major metabolite of glycine)
  - (iii) hyperammonaemia (following deamination of glycine and serine)
  - (iv) metabolic acidosis and hypocalcaemia (due to the glycine metabolites glyoxylic acid and oxalate)

- because glycine is an inhibitory neurotransmitter and passes freely into the intracellular compartment, hyperglycinaemia may be important in pathophysiology. In fact, it may have more importance than the changes in body fluid osmolality or sodium

treatment

- treatment is largely supportive
- management of any reduction in plasma osmolality should be based on the measured osmolality not the sodium
- if measured osmolality is >260mosm/kg and mild neurological abnormalities exist and the patient is haemodynamically stable with normal renal function, close observation & reassurance is usually all that is needed (visual disturbances are reversible and last for less than 24 hours)
- hypertonic saline is only used if the measured osmolality is <260mosm/kg and severe non-visual neurological abnormalities exist
- if the patient is hypotensive and bradycardic with severe and unresolving neurological abnormalities, haemodialysis may be warranted

clinical features

- the TURP syndrome consists of:
  - (i) hyponatraemia
  - (ii) cardiovascular disturbances (hypertension, hypotension, bradycardia)
  - (iii) altered conscious state (agitation, confusion, myoclonic and generalised seizures)
  - (iv) GI upset (nausea and vomiting)

in association with TURP (although it has also been described following endometrial ablation)
- when glycine solutions are used additional features are:
  - (i) blurred vision
  - (ii) blindness
  - (iii) fixed dilated pupils
- it may occur within 15 minutes or be delayed for up to 24 hours post-operatively & is usually caused by an excess absorption of the irrigating fluid which contains 1.5% glycine with an osmolality of 200mosm/kg; although hyponatraemic syndromes have also been described when irrigating solutions containing 3% mannitol or 3% sorbitol have been used both of which have osmolality of 165mosm/kg
- symptomatology usually occurs when >1L of 1.5% glycine or >2-3L of mannitol or sorbitol are used