

March 2009  
QUESTION 22

Outline the mechanism of action of drugs used to control raised intracranial pressure

#### Intracranial pressure

normal value is  $<15$  mmHg  
focal ischaemia when ICP  $> 20$  mmHg  
global ischaemia when ICP  $> 50$ mmHg

#### Aims of treatment

ABC  
reduce intracranial pressure  
maintain adequate blood pressure  
reduce brain metabolic demands

#### Reduce intracranial pressure

##### Mannitol

is an osmotic diuretic which draws fluid out of the tissues and is then excreted in the kidneys  
it causes a dehydration of the brain parenchyma

##### Loop diuretics

augment the response of mannitol  
may cause hypokalaemia

##### Hypertonic saline bolus

may acutely lower ICP  
evidence inconclusive on long term effect

##### Hyperventilation

pCO<sub>2</sub> of 25-35 has been advocated due to the linear relationship with CBF and pCO<sub>2</sub>.

#### Maintain adequate blood pressure

Vasoactives may be required to maintain CPP above 60

#### Reduce brain metabolic demands

Sedation with barbituates reduces brain metabolism and cerebral blood flow  
Anticonvulsant therapy reduces the likelihood of seizures  
Antipyretics should be instituted to reduce fever which will increase metabolic demands  
Pain management/sedation with opioids as required