

JULY 2007  
QUESTION 17

List the potential clinical uses of an alpha 2 adrenoceptor agonist.  
Outline the limitations of clonidine for each use.

### Alpha 2 adrenoceptors

Gi protein coupled receptors  
act via adenylyl cyclase to decrease cAMP.  
generally inhibitory  
3 main types 2A, 2B and 2C

### Located

centrally concentrated in the locus ceruleus (involved in sympathetic outflow)  
in the spinal cord associated with modulation of pain pathways  
peripherally presynaptically on sympathetic nerve fibres  
platelets

### Decreased central sympathetic outflow

Hypertension management  
Decreased noradrenaline release  
Vasodilation, minimal effects on contractility, HR slightly decreased  
Drug withdrawal states  
Reduces the adverse symptoms potentiated by increased sympathetic outflow

### Other central effects

Anti emetic  
Desensitises CTZ  
Sedation and anxiolyses  
Causes less confusion than GABA pathways, and minimal respiratory depression  
Analgesic properties and decreases MAC of volatiles

### Spinal cord

Used as an adjunct in spinal anaesthesia  
May be reason for reduced post op shivering

Clonidine acts on both alpha1 and 2 receptors but is much more selective 1:200

Its main use is for hypertension management - limited by rebound hypertension on withdrawal

Use as an anti-emetic and in drug withdrawal states is limited by its side effects of sedation and dry mouth

It can be used for sedating intubated pts (minimal resp depression is a major advantage) but dexmetomidine is often preferred because it has a shorter half life.

Spinal anaesthesia and post operative shivering is limited by the side effects of hypotension.