

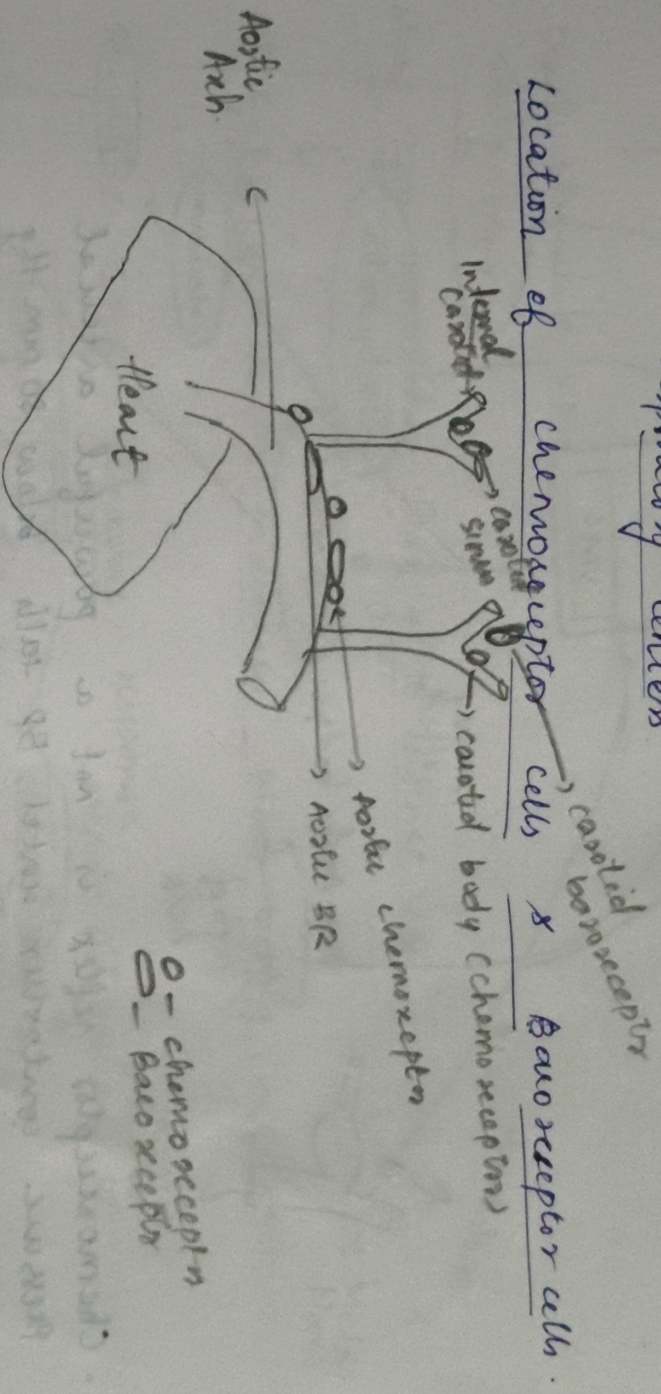
Chemoreceptor reflex

receptors : carotid bodies and aortic bodies

- respond to change in chemical comp's of blood

occurring in hypoxia, hypercapnia, acidosis

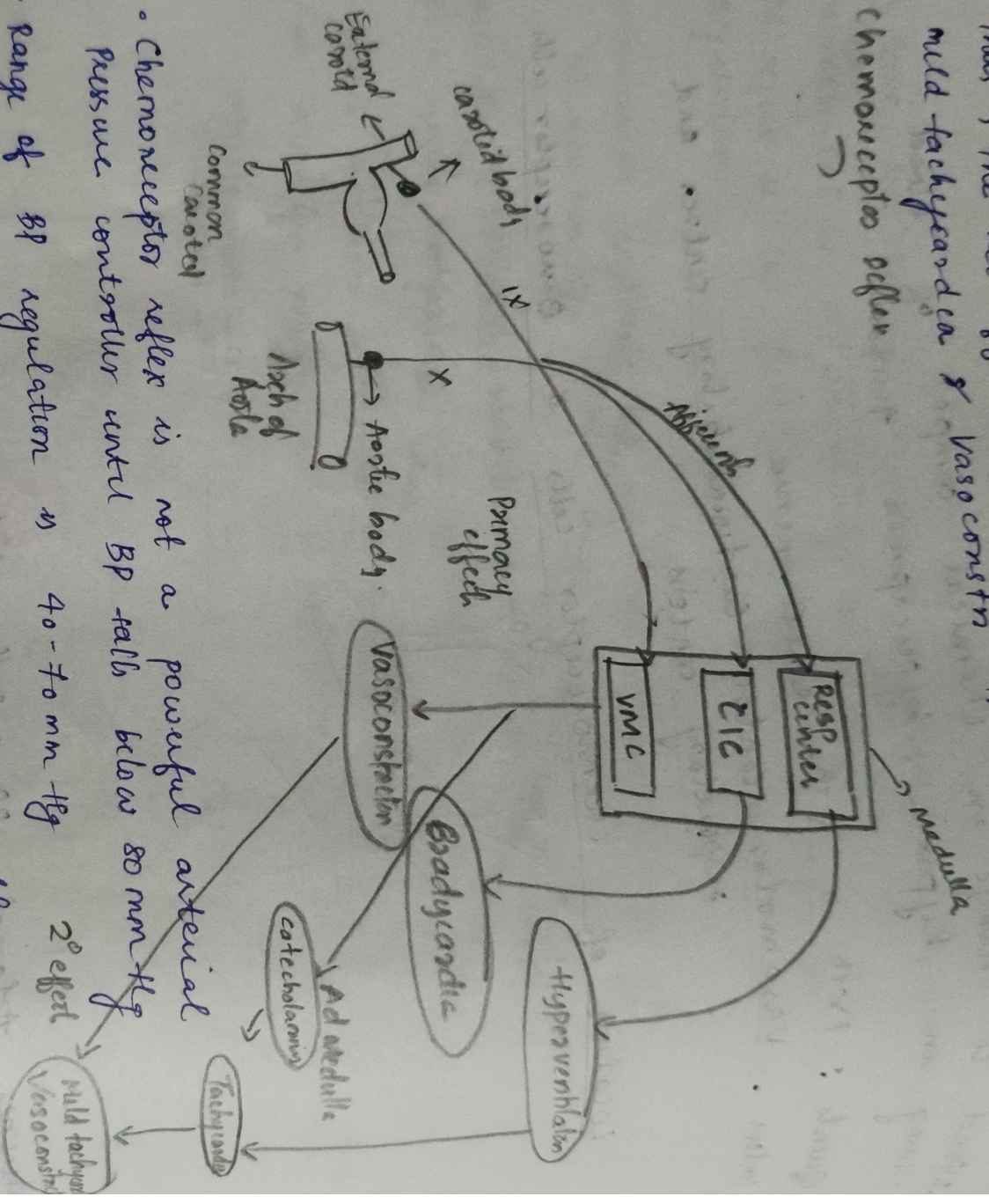
- Afferents : 1×10^6 & 8×10^6 cranial nerve
- Centers : Vasomotor center, cardioinhibitory centers and respiratory centers



Effects of chemoreceptor Reflex.

Thus, the net effect of stimulation of CRS is mild tachycardia & vasoconstr that $\uparrow$ BP

Chemoreceptor reflex



- Chemoreceptor reflex is not a powerful arterial pressure controller until BP falls below 80 mm Hg
- Range of BP regulation is 40-70 mm Hg
- Thus, it is at low pressure that this reflex becomes imp & helps to prevent further fall in pressure.
- Chemoreceptor discharge causes Mayer waves
- Mayer waves: slow, regular oscillations in arterial pressure occurring @ of 1/20 - 40 sec, during hypotension

CAUS Ischaemic response

- Operates b/w 15-50 mm Hg range of MAP
- does not operate until BP falls to 50 mm Hg

CNS Ischaemic response

fall in arterial BP < 50 mm Hg

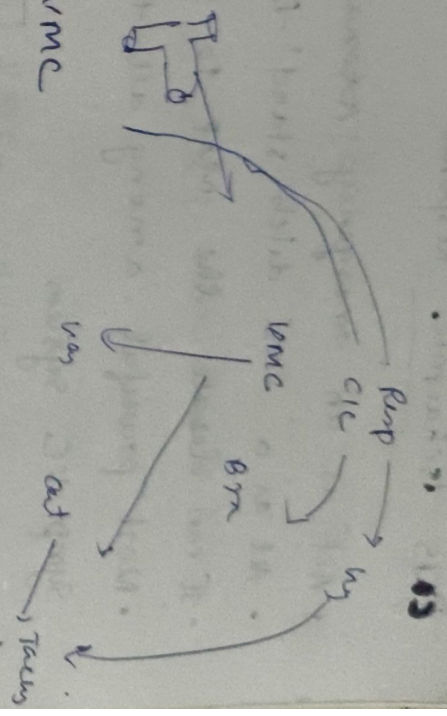
CNS Ischemia

CO₂/lactic Acid Accumulation in VMC

Directly stimulate VMC

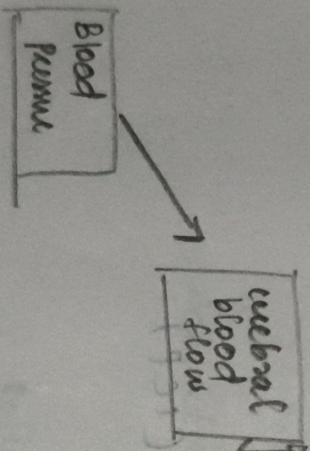
strong sym stimulation leading to intense VC

HR & BP increase to maintain blood supply to brain



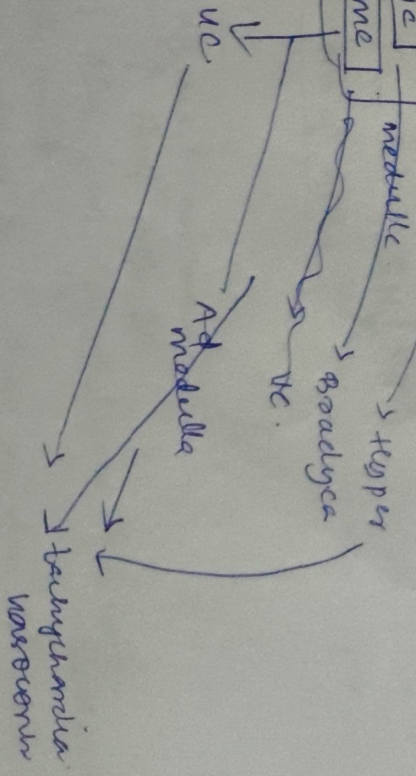
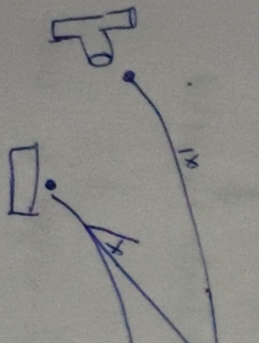
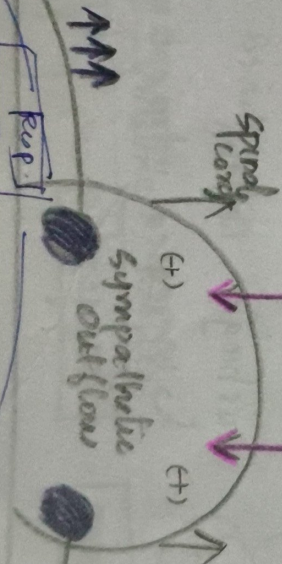
The CNS Ischaemic response

Medulla oblongata



Vasomotor center

Sympathetic tone



CNS Ischaemic Response

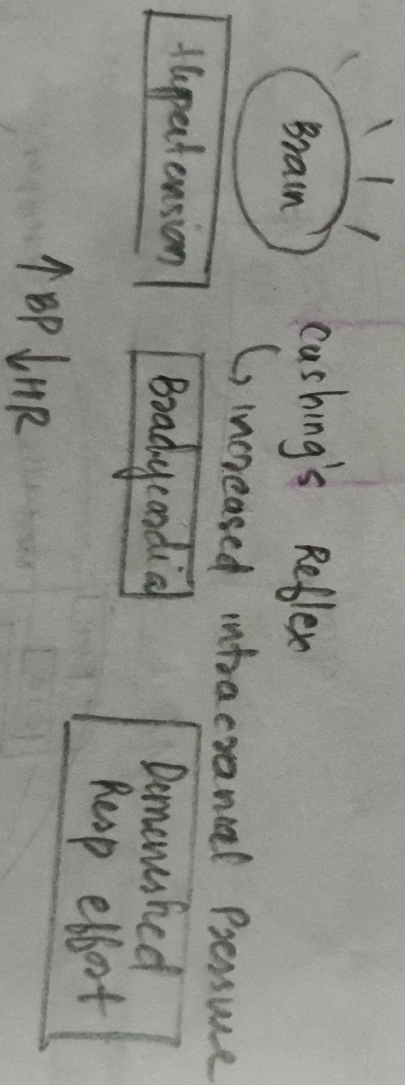
- Act as an emergency arterial pressure control system
- Act as a 'last ditch stand' - to prevent death
- It can elevate the MAP to as high as 950 mmHg
- Most powerful among all the activators of symp VC system

Miscellaneous Shock - term Regulatory Mechanisms

- Cushing reflex
- Atrial stretch
- Bezold-Jarisch
- Bainbridge

Cushing Reflex

A special type of CNS ischaemic response resulting from increased intracranial pressure (ICP)



PAIN BRIDGE REFLEX

Rapid infusion of blood / saline in anesthetized animals produces tachycardia if the initial heart rate is low

- Atrial stretch & receptors are responsible
- Afferents pass through vagus nerve to medulla
- Efferents are transmitted back through vagus & sympathetic nerves to increase HR and force of contraction

Baroreceptor Reflex

help to prevent damming of blood in veins, arteries & pulmonary circulation

Bezold-Jarisch Reflex / coronary chemoreflex

- Injection of chemicals like capsaicin, Veratridine, thapsigargin and serotonin ^{let by activation in} into left coronary artery produces Bezold-Jarisch Reflex followed by rapid bradycardia, hypotension
- capsaicin
phenyl
reflex

- Receptors present in coronary arteries and left ventricle are C-fiber endings

Afferents from these receptors are vagal fibres.

In MI → chemical from infarcted tissue → stimulate ventricular receptors → Bradycardia & hypotension