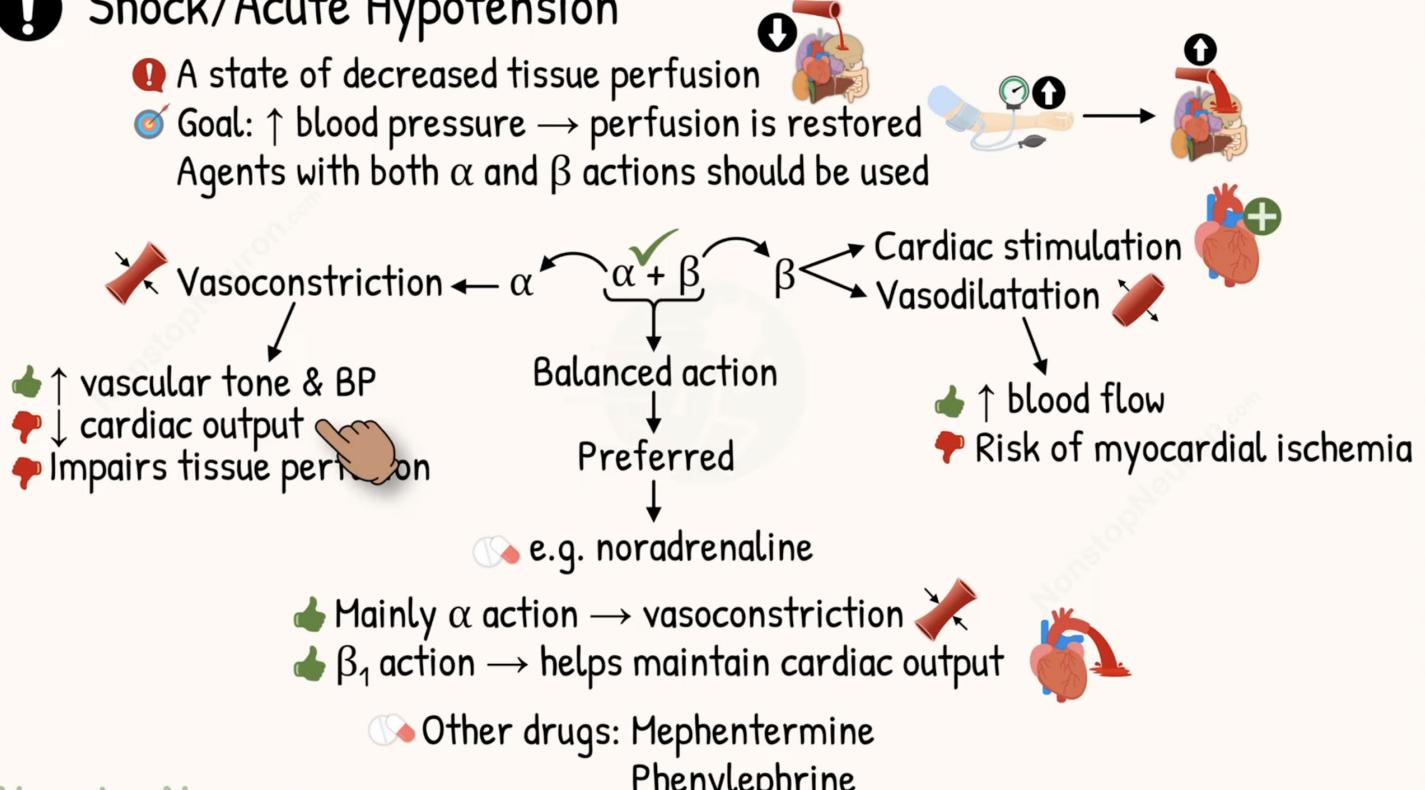


! Shock/Acute Hypotension

- ❗ A state of decreased tissue perfusion
- 🎯 Goal: ↑ blood pressure → perfusion is restored
Agents with both α and β actions should be used



! Cardiac Arrest

● Adrenaline i.v



External cardiac
massage



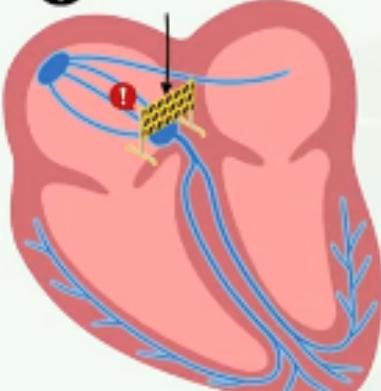
Congestive Heart Failure

⚠ Adrenergic drugs are not used routinely

● Dopamine/Dobutamine

- To overcome acute cardiac decompensation during myocardial infarction, cardiac surgery and in resistant CHF for short term

! AV Block



● Isoprenalin (temporarily)

! Dobutamine stress test

In patients who are not able to perform physical exercise



Dobutamine infused i.v at
increasing rate



↓ Stimulates the heart (β_1)

↑ heart rate and cardiac workload



↓ Ischemic area is exposed



↓ Identified with echocardiography or
nuclear medicine techniques



Phenylephrine

! Fundus examination

Dilates the pupil (α_1)



Does not produce cycloplegia

! Allergic Conjunctivitis

Decongests conjunctiva

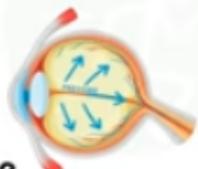


! Localize lesion in Horner's syndrome



Glaucoma

α agonists



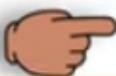
Dipivefrine

Occasionally used as adjunctive medication in open angle glaucoma

Apraclonidine & Brimonidine

Selective α_2 agonist

Used as second line add on drug with topical PG analogues or β blockers





Bronchial Asthma & COPD

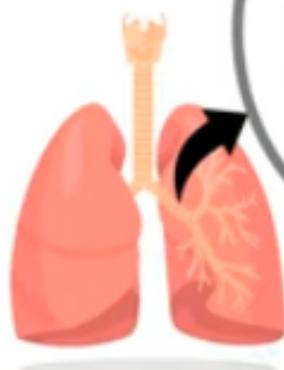


β_2 stimulant

Albuterol

Terbutaline

Salmeterol



Bronchodilatation

! Allergic Disorders

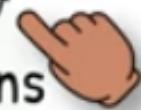


Adrenaline

mediated by

Histamine

is physiological antagonist of



Useful in:

- ! Laryngeal edema
- ! Anaphylaxis
- ! Urticaria
- ! Angioedema

Actions

- Vasoconstriction A small icon of a red blood vessel with a black arrow pointing downwards, indicating contraction.
- Cardiac stimulation A small icon of a red heart with a green plus sign inside, indicating stimulation.
- Bronchodilatation A small icon of two pink lungs with a white bandage wrapped around them, indicating dilation.

Not effective in delayed & other type of allergic reaction

! Attention Deficit Hyperkinetic Disorder (ADHD)

- Hyperkinetic physical behavior
- Short attention span
- Learning problem



● Amphetamines

- Increase attention span → improves behavior & study performance
- Reduction in appetite → growth retardation
- ⚠ Better not to use

● Methylphenidate

Similar to amphetamine



- Less side effects and less growth retardation
- Now preferred

● Atomoxetine

Noradrenaline uptake blocker

- Better tolerability profile
- Now preferred

! Narcolepsy

- Sleep disorder associated with excessive daytime drowsiness

● Amphetamines

- Development of tolerance & abuse
- Behavior abnormalities

● Modafinil

- Less chance of dependence
- Fewer behavioral adverse effects
- Preferred now



Miscellaneous uses

Clonidine

- Hypertension
 - Central sympatholytic
- Diarrhea in diabetics with autonomic neuropathy
- Menopausal hot flushes
- Decrease craving for narcotics, alcohol and cigarette smoking



Dexmedetomidine

- Sedation under:
 - Intensive care circumstances
 - During anesthesia
- Blunts sympathetic response to surgery
- Lowers opioid requirement for pain control and does not depress ventilation



Tizanidine

- α_2 agonist
- Central muscle relaxant



Insulin hypoglycemia

- Adrenaline
- So many side effects

! Cardiogenic Shock

! Poor pumping by the heart

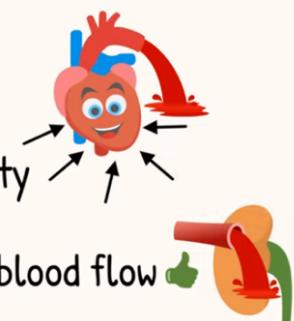


! Dobutamine

→ β_1 → +ve inotropic action → ↑es contractility

! Dopamine

→ D → Renal vasodilatation → Improves renal blood flow



! Anaphylactic Shock

! An allergic reaction

! Adrenaline

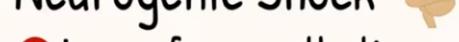
Live saving

Increases BP (α)

Counteracts bronchospasm (β_2)

Counteracts laryngeal edema

❗ Neurogenic Shock



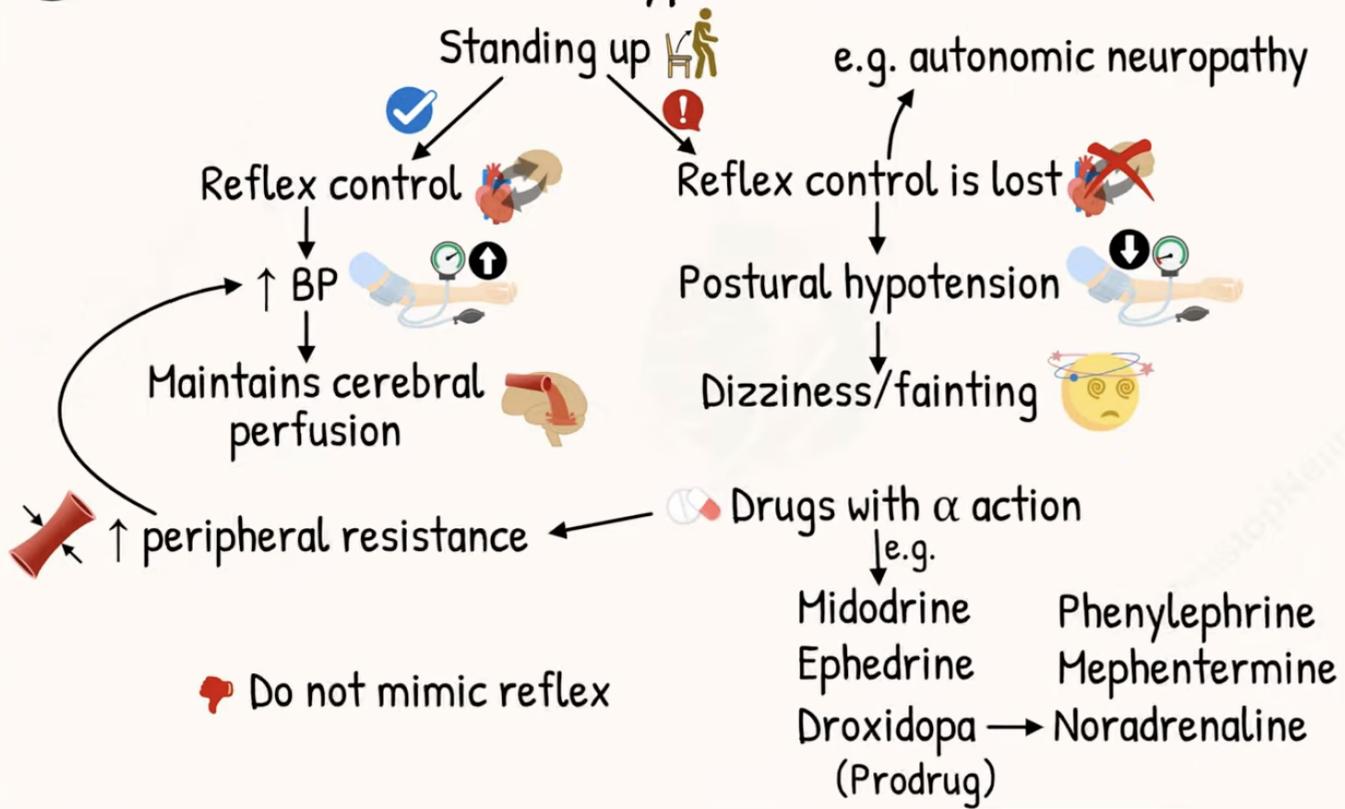
❗ Loss of sympathetic vasoconstrictor tone

↓
Hypotension

🚫 Mephentermine } Vasoconstriction
🚫 Ephedrine } Counteracts bradycardia



! Chronic Orthostatic Hypotension



PARASYMPATHETIC NERVES "Rest and digest"

Constrict pupils

Stimulate saliva

Slow heartbeat

Constrict airways

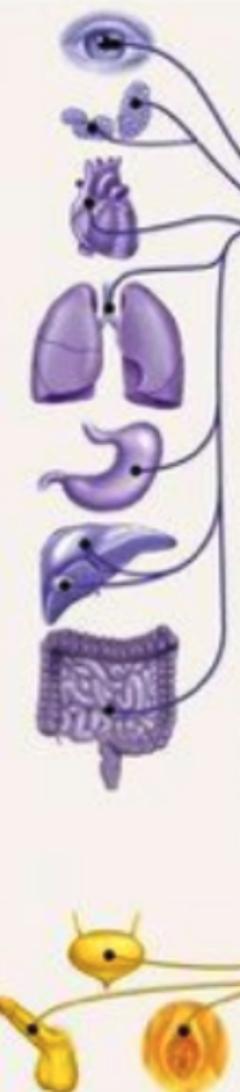
Stimulate activity of stomach

Inhibit release of glucose; stimulate gallbladder

Stimulate activity of intestines

Contract bladder

Promote erection of genitals



SYMPATHETIC NERVES "Fight or flight"

Dilate pupils

Inhibit salivation

Increase heartbeat

Relax airways

Inhibit activity of stomach

Stimulate release of glucose; inhibit gallbladder

Inhibit activity of intestines

Secrete epinephrine and norepinephrine

Relax bladder

Promote ejaculation and vaginal contraction

Figure 45-20 Biological Science, 2/e
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Adrenergic

"Fight or flight"

Adrenergic blockers

"Feed, breed, pee, poo"

Anticholinergics

"Can't see, pee, spit or sh*t"

"Hot as a hare, dry as a bone, red as a beet, mad as a hatter, blind as a bat"

NO GLAUCOMA

Cholinergics

Salivation
Lacrimation
Urination
Diarrhea
GI distress
Emesis

Adrenergic

- Asthma, COPD = albuterol
- anaphylaxis, cardiac arrest = epinephrine
- Centrally acting = clonidine = antihypertensive

$\alpha_2 \text{ L N S}$

Adrenergic blockers

Hypertension= beta blockers "lol"
BPH = doxazosin

Anticholinergics

NO GLAUCOMA

Includes antihistamines and antidepressants

Overactive bladder = tolterodine

Parkinson's = benztropine

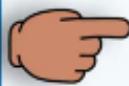
motion sickness = scopolamine

Cholinergics

Myasthenia gravis & reverse
neuromuscular block = neostigmine
post-op neurogenic bladder = bethanechol

! Control local bleeding (Hemostasis) From skin and mucous membrane

e.g. epistaxis, surgery or trauma related bleeding



• Adrenaline in epistaxis

• Noradrenaline in gastric erosion and stress ulcer

• Cocaine in nasopharyngeal surgery

Hemostatic + local anesthetic

! As nasal decongestant

- ! Cold
 - ! Rhinitis
 - ! Sinusitis
 - ! Blocked nose or eustachian tube
- ⊕ Naphazoline
 - ⊕ Xylometazoline
 - ⊕ Oxymetazoline
 - ⊕ Phenylephrine



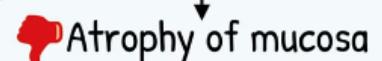
Once effect wears



Prolonged use



↓ Ischemia



Infants and young children are more sensitive to central effects of imidazolines i.e. naphazoline, xylometazoline, oxymetazoline

↓
Should be used in lower concentration



Should be used cautiously in hypertensive patients and elderly males

