Beta 1 Selective Agonists

Located at	Myocardium
Stimulation results in	Increased Heart rate and increased force of myocardial contraction (Increased Cardiac output)
USED FOR	To increase cardiac output in emergency situations such as CVS shock or to treat complications in Cardiac Surgery.
also USED FOR	To increase cardiac function in the short-term treatment of certain type of heart disease, -heart failure
Dobutamine (Dobutrex)	Use: Short term mx of Cardiac decompensation that occurs during heart disease or heart surgery. How: Increase force of cardiac contraction. Adm: IV pump infusion (to stable plasma levels)
Dopamine (Intropin)	directly stimulates Beta 1. Low DOSE: cause peripheral vasodilatation. Adm: IV drip to maintain stable plasma levels
ADVERSE Effects	Chest pain, difficulty in breathing

Beta 2 Selective Agonists

Location	on bronchiole smooth muscle
How	Stimulated Beta 2 --> mediates relaxation of bronchioles
Treat	Bronchospasm associated with respiratory ailments such as asthama, bronchitis, emphysema. Treats ALSO Cardiac Arrythmias or heart failure

Beta 2 Selective Agonists (cont)

Another LOCATION	Uterine Muscle (When stimulated-->cause inhibition or relaxation of the uterus)
Beta 2 Selective Bronchodialators	Albuterol (Provventil, Ventolin), Metaproterenol (Alupent,), Pirbuterol (Maxair), Salmeterol (Servent), and Terbutaline (Brethaire, bricanyl).
what it causes	Bronchodilatation at pulmonary smooth muscles - Asthma.
Isoproterenol (Isuprel)	can be the same but: less beta 2 selective and affects beta 1 receptor too.
Adm	Oral inhalation so that affects on the bronchial membranes.
Adverse Effect	nervousness, restlessness, trembling. sometimes fatal asthamatic attaacks.
When used to treat premature labor,	Terbutaline - increase in maternal heart rate and systolic blood pressure, as well as maternal pulmonary edema. Sometimes fatal to mother.

Adrenergic Drugs

Adrenergic	Refers physiological responses related to adrenaline and noradrenaline
Other names	Adrenaline and NorAdrenalin = Epinephrine and NonEpinephrine

Adrenergic Drugs (cont)

Adrenergic Drugs	Stimulate activity in tissues that respond to Epi and NorEpi (Adrenergic agonists) OR inhibit epinephrine and norepinephrine influence (adrenergic antagonists)
From where they release?	Adrenal gland and reach to Heart, Kidneys, and various other tissues and organs via systemic circulation.
Where it is found	Junction between sympathetic postganglionic neurons and peripheral tissues
Adrenergic agonists	Sympathomimetic
Adrenergic antagonists	sypatholytic

Subclassification of Adrenergic Drugs

Adrenergic receptors can be divided into two	Alpha and Beta receptors
Five receptor subtypes	Alph 1 (a, b, d) 2 (a, b, c) beta 1,2,3,
Alpha 1 or alpha 2	Located at specific tissues throughout the body--> the responsed depend upon interaction between that receptor andthe reseptive tissue
Agonist	Increase or mimic the receptor mediated response
Antagonist	decrease the receptor mediated resonce
Epinephrine drug	affects alpha and beta receptors Equally
Receptor selectivity	

MIX ALPHA AND BETA

Amphatamines	Drugs:Amphetamine (generic), dextroamphetamine (Dexedrine) and methamphatamine (Desoxyn)	Increase Norepi release and decrease NorEpi reuptake and breakdown at adrenergic synapses - so Increase activity at synapses with Norepi sesitive receptors - Alpha 1,2 and Beta1)
	Used to treat attention-deficit disorder in children, to increase mental alertness in adults with narcolepsy.	The use to suppress appetite or to combat normal sleepiness is discourage- as they have high potential of abuse
Ephendrine (Generic)	Stimulate Alpha 1, 2 and beta 1 and also stimulate the same by increasing release of norepi at synapses	Use: Primarily for Alpha 1 effects: treat hypotension.
	IV injection	ALSO a nasal decongenstant - stimulate alpha 1: combined with other agents (antitussives, antihistamines) to form cough and cold products

MIX ALPHA AND BETA (cont)

	As Bronchodilator	Narcolepsy treatment
Epinphrine (Adrenalin, Bronkaid Mist, Primatene Mist,)	All receptors are stimulated.	Antiasthmatic inhalation products. - primary stimulate B2 bronchii.
	Effect of Alpha 1 vascular	vasoconstirction and control of bleeding during minor surgical procedures (sutures). Prolongs effects of the anasthetics
	B1 effect on heart	reestablish normal cardiac rhythm during cardiac arrest.
	Drug of choice in Anaphylactic shock	hypersensitive allergic reaction marked by CVS collapse (decreased cardiac output, hypotension) and severe bronchoconstriction.
why	Becase ability to	Stimulate heart (b1), vasoconstriction periphery (alpha 1) and Dilate bronchi (beta2).

MIX ALPHA AND BETA (cont)

Metaraminol (aramine)	act like Epinephrine	Directly stimulates alpha 1, 2 and beta1
	Treat	shock or general anasthesia
NorEpiNephrine (Levophed)	Stimulates: Alpha 1, 2 and Beta 1.	displays little agonistic activity toward beta2.
	Adm IV injection	Treat: Hypotension during shock or general anasthesia.
Adverse Effect	Nervousness, restlessness, anxiety.	Prolonged use Causes- hypertension, arrhythmias, cardiac arrest.
		Prolonged Use in inhalation: Cause bronchial irritation.

ALPHA 1 SELECTIVE AGONISTS

Alpha 1 or alpha 2	Contraction and VasoConstriction : Increase BP
Mephentermine (Wyamine)	Maintain/restore BP during hypotensive episodes. Administered: IV or IM injections.

ALPHA 1 SELECTIVE AGONISTS (cont)	
Methoxamine(Vasoxyl)	Increase and maintain BP in severe hypotension- during general anesthesia and spinal anesthesia. Treats: Paroxymal supraventricular tachycardia by causing peripheral vasoconstriction, activation of baroreceptor reflex. Adm : IV injection
Midodrine (ProAmatine)	Treat: orthostatic hypotension Adm: Orally Also: treat hypotension in patients who go under dialysis, offset the hypotensive effects of psychotropic drugs like antipsychotic medications
Oxymetazoline (Afrin, OcuClear, Many others)	Adm: naslal drops and nasal sprays. Treat: Decrease nasal congestion and decrease redness and minor eye irritation
Phenylephrine (Neo-Synephrine, Others)	Treat: hypotension, treat certain episodes of supraventricular tachycardia. Adm: Orally a lso or nasal spray, or topically as eye drops.
Pseudoephedrine (Drixoral, Sudafed, etc)	Adm: Orally - relieve cold symptoms
Xylometazoline (Otrivin)	nasal spray to decrease congestion during cold and alergies.

ALPHA 1 SELECTIVE AGONISTS (cont)	
Adverse Effect:	increased BP, headache, abnormally slow heart rate, sometimes chest pain, difficulty in breathing, feelings of nervousness

ALHA 2 SELECTIVE AGONISTS	
Primary use	Hypertension, spasticity..
How	Drug stimulate alpha-2 receptors located at brain and brainstem --> cebtral alpha2 exert an inhibitory effect on sympathetic discharge from the vasomotor center in the brainstem ---> diminished sympathetic discharge results in decreased BP.
Also effective on Spinal cord	Stimulation of Alpha 2 --> causes interneuron inhibition and a subsequent decrease in excitability of motor neurons supplied by interneurons. USE TO normalize the neuronal activity in Spasticity
Brimonidine (Alphagan)	Adm: local to eye to treat glaucoma. (Decreases vitreous humor production and increasing drainage of vitreous humor from the eye)

ALHA 2 SELECTIVE AGONISTS (cont)	
Clonidine (Catapres, Duraclon)	Antihypertensive and analgesic, It does not effect ALONE. so given with PRAZOSIN (Minipress - alpha antagonists). also useful to treat severe pain in cancer.
Guanabenz (Wytensin)	decrease BP (same as Clonidine)
Guanfacine (Tenex)	similar to Guanabenz
Methyldopa (Aldomet)	Antihypertensive.
Tizanidine (Zanaflex)	To treat spasticity. Similar to Clonidine but has fewer vasomotor effects and less likey to cause hypotension and other CVS problems.
Adverse Effects	Hypotension, dizziness, drowsiness, dry mouth. Difficulty in breathing, slow heart rate, persistent fainting - overdose of drugs.

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