



Anesthetic considerations with hypertensive patient
Practical lecture 2
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Why hypertension is important for anesthesia ?

- Effect on cerebral & renal blood flow
- C.V.S complications
- End organs damage

What is the new classification of hypertension

New classification

• Borderline	140-159	90-99
• Mild	140-159	90-99
• Mod.	160-179	100-109
• Sever	180-209	110-119
• Very sever	>210	>120

What are the main items of anesthesia ?

- **Preoperative evaluation**
- **Induction of anesthesia**
- **Maintaince of anesthesia**
- **Post operative care**

What are pre-operative evaluation ?

- **Post pond the surgery or not .**



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- Blood pressure controlled or not
- Whether there is end organ damage
- Whether patient admitted to CCU last 6 months
- Get coronary ischemia or cerebrovascular accident
- Get therapeutic catheterization last 4 months
- Communication with his physician & ask about his fitness for surgery & his advice for type of anesthesia
- Type of antihypertensive medication & whether he take aspirin , clopidogral, enoxaparin





**QUICK
 PHARM
 REVIEW**

**ANTIHYPERTENSIVE
 MEDICATIONS**

	ACE Inhibitors	Beta Blockers	Calcium Channel Blockers
Mechanism of Action 	Dilates blood vessels to increase the amount of blood pumped by the heart, while also lowering blood pressure.	Makes the heart beat slower and less forcefully, which in turn lowers blood pressure.	Relaxes and widens the arterial blood vessel walls. Some also slow heart rate.
Common Drugs 	Enalapril (Vasotec) Lisinopril (Prinivil) Quinapril (Accupril) Benazepril (Lotensin) Suffix: -PRIL	Metoprolol (Lopressor) Atenolol (Tenormin) Propranolol (Inderal LA) Bisoprolol (Zebeta) Suffix: -LOL	Nifedipine (Procardia) Nisoldipine (Sular) Amlodipine (Norvasc) Diltiazem (Cardizem) Suffix: -PINE
Nursing Considerations 	Teach signs of angioedema of the lips, tongue and face. Any time there is swelling of the face, think AIRWAY. Angioedema can be life threatening! Teach patient to avoid potassium supplements, salt substitutes, NSAIDs (ACE inhibitors decrease potassium excretion in the urine which could lead to hyperkalemia). Teach side effects; HA, dizziness, fatigue and a constant dry cough.	Monitor patient for bradycardia and hypotension, including orthostatic hypotension. Always assess BP and HR prior to drug administration. Monitor patient for common side effects i.e. fatigue, pulmonary edema, and congestive heart failure. Since they can affect the airway, BBs are avoided in patients with asthma or COPD.	Teach common side effects: <ul style="list-style-type: none"> • Hypotension - change positions slowly • Peripheral edema - elevate legs • Constipation - increase fiber and fluids • Gingival hyperplasia - good dental hygiene Monitor CBC, sodium, potassium, creatinine, BUN, LFTs and urinalysis, EKG Teach to avoid grapefruit juice (interaction)

Day of operation :


Patient should take his all antihypertensive , anxiolytic with good psychological reassurance.



When we stop taken aspirin before anesthesia? 72hr._ 1 wk.

What is your target blood pressure ?

- 140/90 < 60 yes
- 60 > 160/90 yes
- 90/140 > in DM patient
- All without end organ damage or under control .



PHARM HACK

HYPERTENSION MEDS

"PRIL"	"SARTAN"	"LOL"	"DIPINE"	"IDE"
ACE INHIBITORS	ARBs	BETA BLOCKERS	CALCIUM CHANNEL BLOCKERS	DIURETICS
LISINOPRIL	LOSARTAN	METOPROLOL	AMLODIPINE	FUROSEMIDE
Adverse Effects "αPRIL"	Adverse Effects "FAIL"	Adverse Effects "LOL"	Adverse Effects "DIPINE"	Just remember the D's
A: Angioedema P: Potassium Elevated R: Recurrent Cough I: Itchy Skin L: Low BP	F: Fetal Injury A: Angioedema I: Imbalance of Electrolytes L: Low BP	L: Low HR O: Overtired L: Low BP	D: Decreased BP I: Increased Temp P: Palpitations I: Inability to Move N: Nausea & Diarrhea E: Edema	D: Decrease Fluid Retention D: Diet ↑ Vit K (except K+ Sparing) D: Daily Weight D: Daylight Med Admin

#1 TESTED ADVERSE EFFECT: HYPOTENSION

What are your induction of anesthesia for hypertensive patient ?



- **Pre medication with : To reduce sympathetic stimulation of EET or patient stress of the condition .**
 1. **Benzodiazepine (midazolam 1or2 mg , diazepam 5or 10 mg) ivy**
 2. **Opioid (fentanyl ,remifentanyl, morphine, pethetdin)**
 3. **Zylocaine i.v**
 4. **Beta blocker (betaloc) Metoprolol , esmilolol**
- **Pain management in all its methods start early**
- **Smooth induction ,deep anesthesia**
- **Try to be away from ketamine anesthetic dose & use its sedative or analgesic dose .**
- **Use antihypertensive agents on need**
- **Full monitoring of vital signs , ECG , Capnography are important here**
- **Input & output to avoid over hydration or dehydration**

What are the best intra operative antihypertensive ?

- **Alpha agonist**
- **Beta blocker**
- **Magnesium sulfate**
- **Increase depth of anesthesia (increase volatile)**

- **Vasodilators (angesid)**
- **Diutrics especially with those of LVH left side heart failure.**

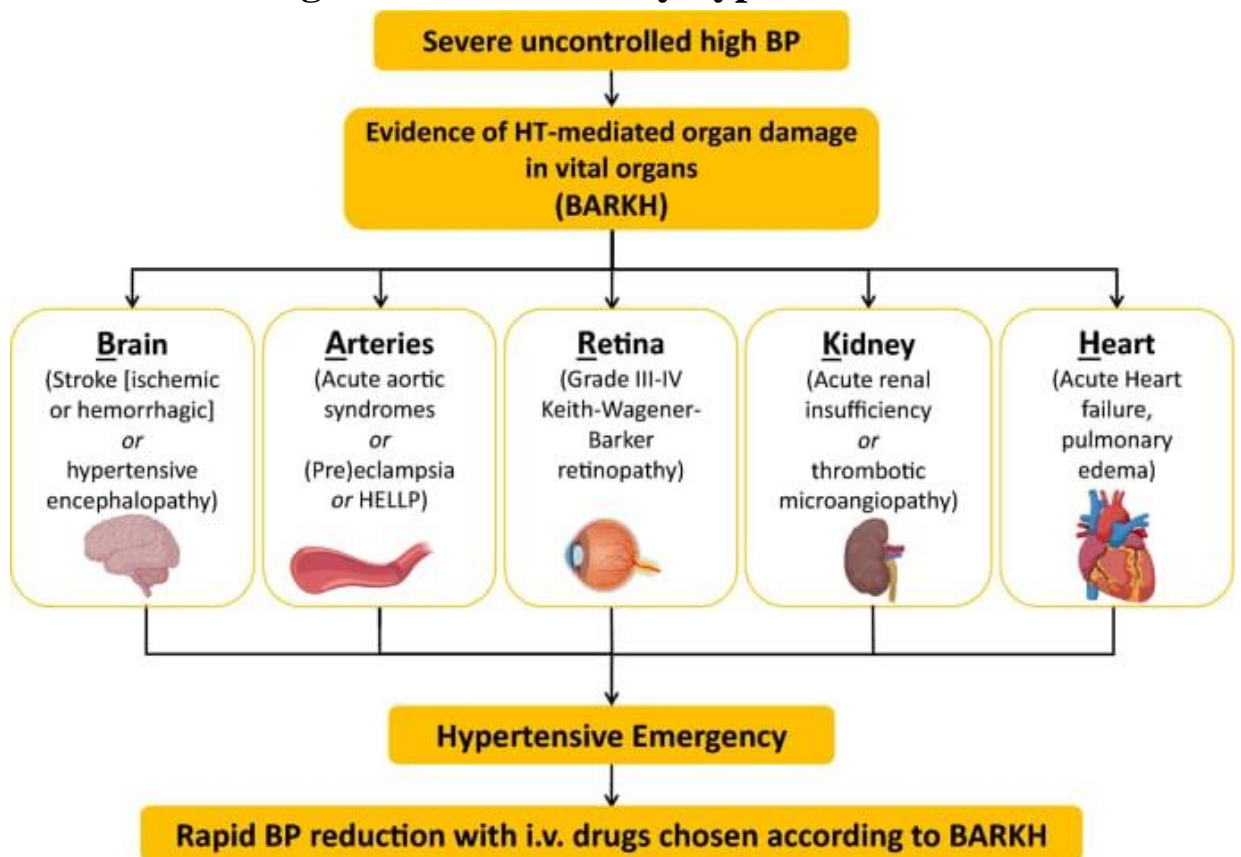
What are our rules in post-operative hypertensive patient ?

- **Smooth recovery ,prevent sympathetic stimulation on extubation (beta blocker , Zylocaine , analgesia)**
- **Good analgesia , even epidural pain management**



- HDU admitting
- Close vital signs monitoring , even invasive arterial blood pressure if need .
- Continue on his usual antihypertensive agent with additive agents if advised by the medical physician

What are the organs that affected by hypertension ?





Hypertension

