Approach to patient with hypertension

Dr. Amitesh Aggarwal

Definition

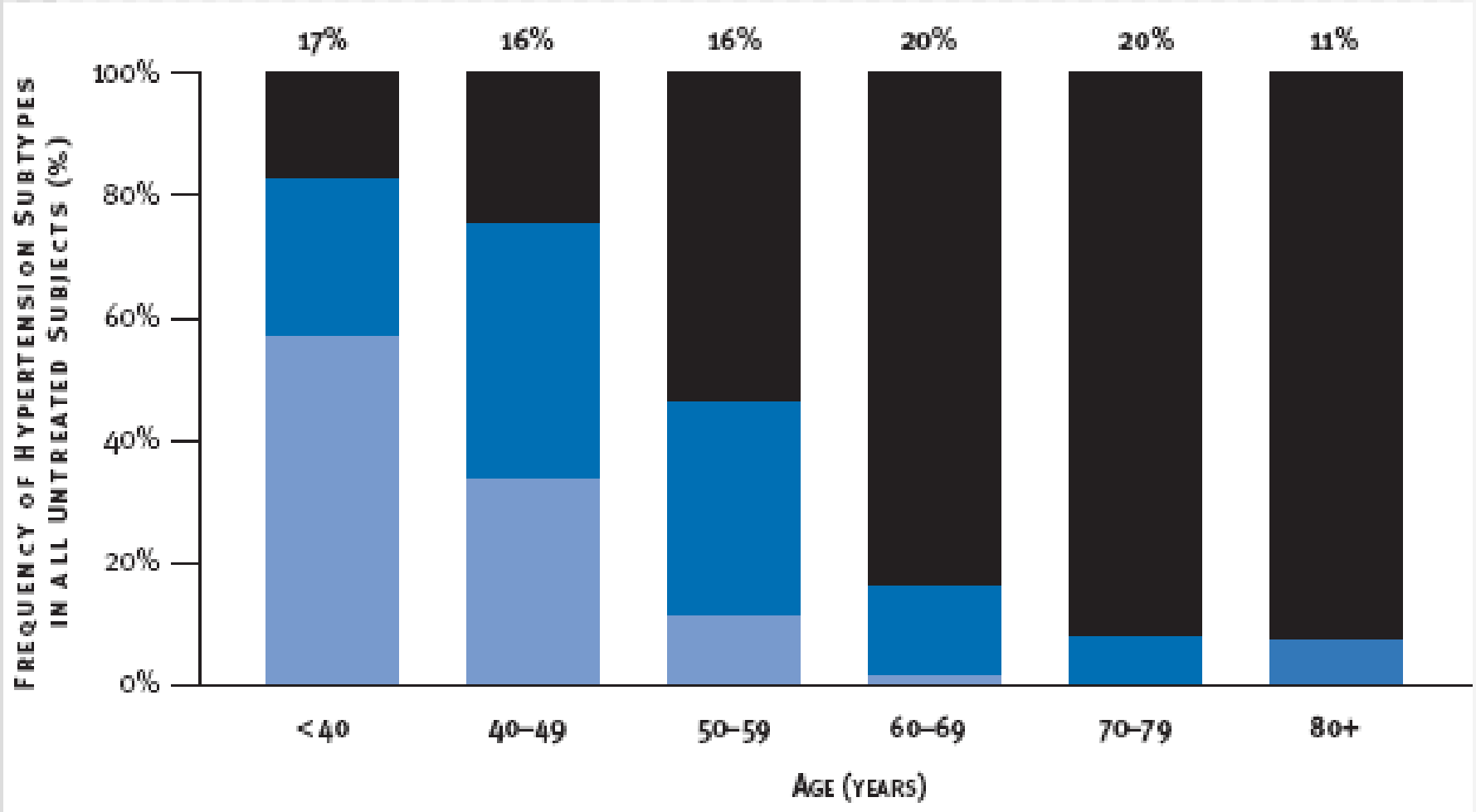
- A systolic blood pressure **(SBP) >139 mmHg** and/or
- A diastolic **(DBP) >89 mmHg.**
- Based on the average of **two or more** properly measured, seated BP readings.
- On each of **two or more** office visits.

Accurate Blood Pressure Measurement

- The **equipment** should be validated.
- The **patient** must be seated quietly for 5 min.
- The **auscultatory method** should be used.
- **Caffeine, exercise, and smoking should be avoided** at least 30 minutes before measurement.
- An **appropriately sized cuff** should be used.
- "**White coat** syndrome"

Frequency Distribution of Untreated HTN by Age

Isolated Systolic HTN ISH Systolic Diastolic HTN SDH Isolated Diastolic HTN IDH



Classification (JNC 7)

BP Classification	SBP* mmHg	DBP* mmHg
Normal	<120	and <80
Prehypertension	120–139	or 80–89
Stage 1 Hypertension	140–159	or 90–99
Stage 2 Hypertension	≥160	or ≥100

Hypertensive Urgencies (Accelerated Hypertension)

- **Severe elevated BP** (>180/110 mmHg)
- **Without** progressive end-organ dysfunction.
- Usually due to under-treatment or poor compliance.

Hypertensive Emergencies (Malignant Hypertension)

- **Severely elevated BP** (>220/140 mmHg).
- **With** progressive target organ dysfunction.
- Require emergent lowering of BP.
- **Examples**: **Severely elevated BP** with:

  Hypertensive encephalopathy

  Acute MI

Types of Hypertension

- **Primary HTN**:
- also known as essential HTN.
- accounts for 95% cases of HTN.
- no universally established cause known.

- **Secondary HTN**:
- less common cause of HTN (5%).
- secondary to other potentially rectifiable causes.

Causes of Secondary HTN

- **Common**
  - Renal parenchymal disease (2-6%)
  - Renovascular disease (0.2-4%)
  - Mineralocorticoid excess (0.3%)
  - Sleep Breathing disorder (0.2%)
- **Uncommon**
  - Pheochromocytoma (0.1%)
  - Glucocorticoid excess (0.1%)
  - Coarctation of Aorta (0.1%)
  - Hyper/hypothyroidism (0.1%)
  - Drugs (**OC**, NSAIDS)
  - Hyperparathyroidism

Patient Evaluation Objectives

- Exclusion of secondary causes
- Extent of target organ damage
- Assessment of patients' cardiovascular risk status that may affect prognosis and guide treatment

History (risk factors)

- Cardiovascular risk factors includes hypercholesterolemia, DM, tobacco use
- Use of over-the-counter medications
- Herbal medicines containing licorice
- Oral contraceptives
- Alcohol abuse
- Illicit drugs - cocaine

History (Secondary causes)

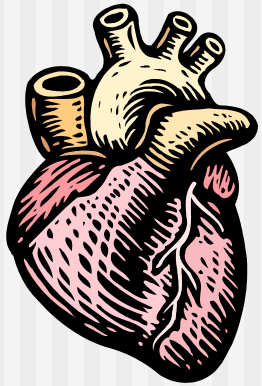
- Onset: at age < 30 yrs or > 55
- Episodic, headache and chest pain/palpitation, sweating
- Morbid obesity with history of snoring and daytime sleepiness
- Hypertension resistant to 3 or more drugs
- Profound diuretic-induced hypokalemia/ weakness (<3.0 mmol/L).
- Incidental adrenal adenomas.

History (choice of therapy)

- **Angina/MI**: b-blokers
- **Asthma**: Preclude use of b-blockers
- **Heart failure**: ACE inhibitors indication
- **DM**: ACE- I preferred
- **Gout**: May be aggravated by diuretics
- **Claudication**: May be aggravated by b-blockers

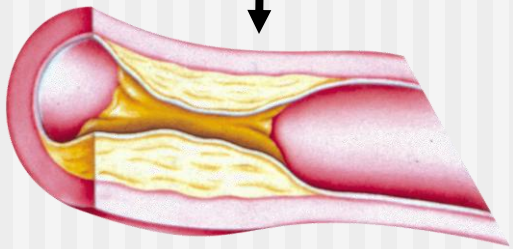
Consequences of Hypertension: Target Organ Damage

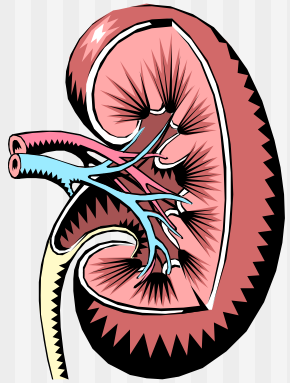
Hypertension



Transient ischemic attack, stroke

LVH, CHD, CHF





Retinopathy

Peripheral arterial disease

Chronic kidney disease

Physical Exam

- Measured in both arms and in one leg (coarctation of aorta or atherosclerotic obstruction)
- Measured in both supine and sitting positions
- Palpation of all peripheral pulses
- Pallor, edema, abdominal bruit
- Truncal obesity, buffalo hump
- Fundus, neurological, cardiovascular
- Thyroid

Routine Labs

- CBC
- Urinalysis
- Blood glucose
- serum potassium, sodium
- KFT
- Lipid profile
- ECG/ ECHO

Special tests

- Aldosterone/plasma renin activity ratio
- Dexametasone supression test
- Thyroid function tests
- urinary catecholamines and metanephrines
- CECT Abdomen
- CTA/ MRA

Goals of Treatment

- Treating SBP and DBP to targets that are <140/90 mmHg
- Patients with diabetes or renal disease, the BP goal is <125/75 mmHg

Benefits of Treatment

- Reductions in **stroke** incidence,

  35–40 percent
- Reductions in **MI**,

  20–25 percent
- Reductions in **HF**,

  45-50 percent.

Management

BP Classification	SBP* mmHg	DBP* mmHg	Lifestyle Modification	Without Compelling Indication
Normal	<120	and <80	Encourage	
Prehypertension	120–139	or 80–89	Yes	No antihypertensive drug indicated.
Stage 1 Hypertension	140–159	or 90–99	Yes	Thiazide-type diuretics for most. May consider ACEI, ARB, BB, CCB, or combination.
Stage 2 Hypertension	≥160	or ≥100	Yes	Two-drug combination for most† (usually thiazide-type diuretic and ACEI or ARB or BB or CCB).

Lifestyle modifications

Weight reduction	Maintain normal body weight (body mass index 18.5–24.9 kg/m²).
Adopt DASH eating plan	Consume a diet rich in fruits, vegetables, and lowfat dairy products with a reduced content of saturated and total fat.
Dietary sodium reduction	Reduce dietary sodium intake to no more than 100 mmol per day (2.4 g sodium or 6 g sodium chloride).
Physical activity	Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day, most days of the week).
Moderation of alcohol consumption	Limit consumption to no more than 2 drinks (e.g., 24 oz beer, 10 oz

Drug therapy & choices

Compelling Indications	Diuretic	ßB	ACEI	ARB	CCB	AA
Heart failure	✓	✓	✓	✓		✓
Post-MI		✓	✓			✓
High CAD risk	✓	✓	✓		✓	
Diabetes	✓	✓	✓	✓	✓	
Chronic kidney disease			✓	✓		
Recurrent stroke prevention	✓		✓			

Thank you

http://dramiteshaggarwal.yolasite.com

dramitesh@rediffmail.com