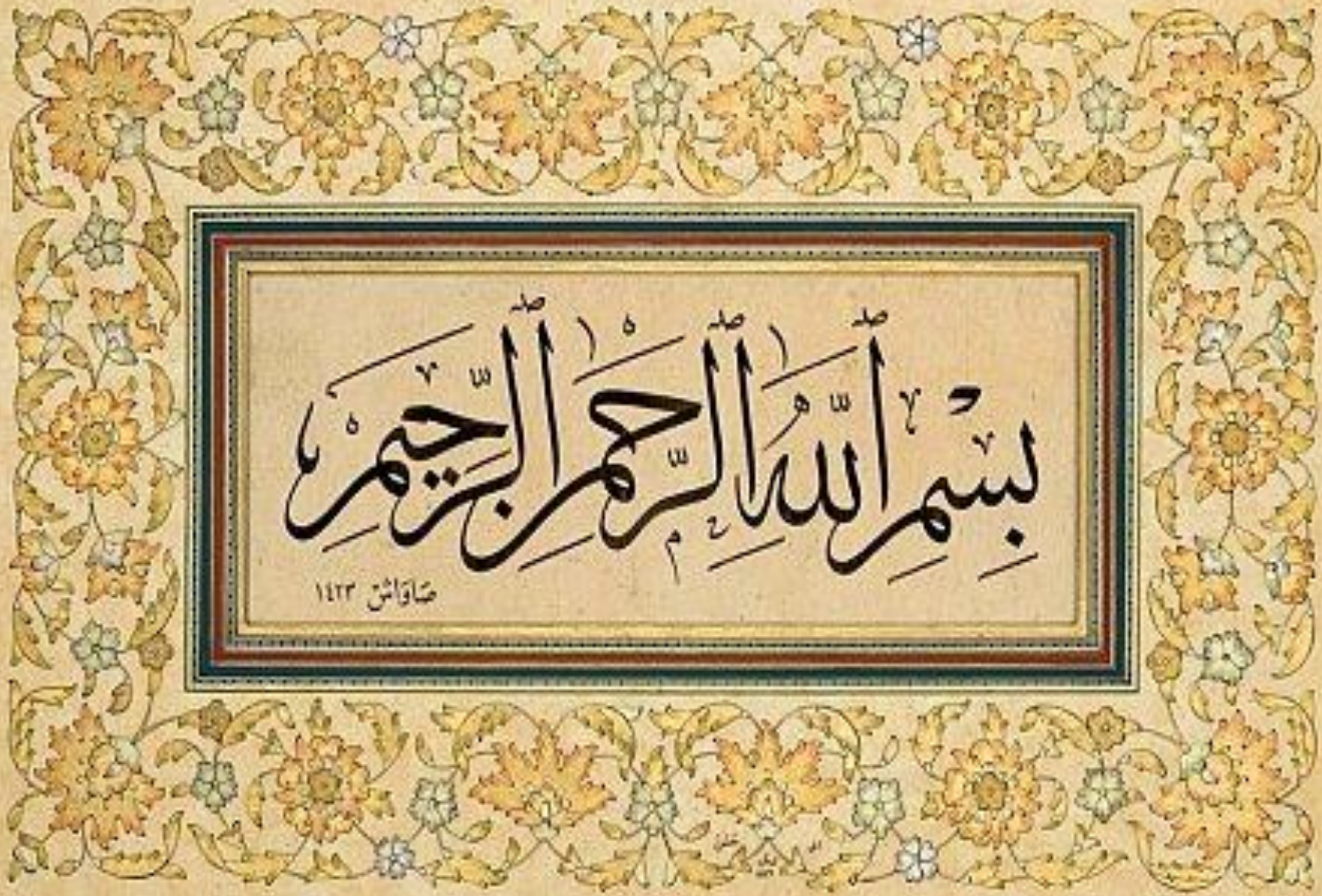
بسم الله الرحمن الرحيم
صاوائش ١٤٢٣

Definition

- Hypertension — HTN is defined as either systolic and/or diastolic BP ≥95th percentile measured upon three or more separate occasions. The degree of HTN is further delineated by the two following stages.
- - Stage 1 HTN — Systolic and/or diastolic BP between the 95th percentile and 5 mmHg above the 99th percentile.
- - Stage 2 HTN — Systolic and/or diastolic BP ≥99th percentile plus 5 mmHg.

When to measure BP?

- Routine PE
- Headache, vertigo
- Decrease Level of Consciousness
- Facial Palsy
- Convulsion
- Hemiparesis
- Unexplained Anemia
- FTT,Irritability, Vomiting
- Suspected Renal or Vascular Diseases
- DM, Abdominal mass
- Heart Failure, Respiratory Distress
- Family history of HTN

Case 1

- A 5 Yr old girl referred for check-up
- PE: WNL Except BP=140/90
- Lower limb BP=110/70
- Cardiac Echo: Normal
- Angiography: COA
- Treatment: Ballon Dilatation

Case 2

- A 4 month old infant, admitted due to uncontrolled convulsion
- PE: BP=90/70 Palpable liver & spleen
- Sono: Unilateral Cystic kidney
- Second BP=140/90
- BP control also controlled convulsion
- Final Diagnosis: Tuberous Sclerosis

Case 3

- A 4 Yr old boy with VP Shunt (due to hydrocephalus) was consulted due to uncontrollable convulsions in Surgery Ward. The shunt was not working well and HTN was not controllable.
- Changing the shunt catheter was followed by normal BP and control of convulsion.

Case 4

- A 15 Yr old girl was wondered due to anemia for 3 years. BP was not measured & in-spite of a lot of work-ups, BUN was not checked.
- PE: Wt= 15 Kg, Ht=115, BP=140/100
- Final Diagnosis: CRF

Case 5

- An 11 Yr old boy, with facial palsy, was admitted in neurosurgery ER with impression of pseudotumor cerebri. Daily LP was done for one week and was discharged with BUN=20. A neurologist recommended carbamazepine. Before starting treatment, he developed edema, blindness, pallor and oliguria.
- Findings: anemia, thrombocytopenia, renal failure and BP= 160/120.

Case 6

- This 5 YR old girl was admitted with impression of febrile convulsion. BP was not measured at admission, but later on incidentally it was found to be 160/120.
- Final Diagnosis: Hypertensive Encephalopathy secondary to AGN.

Case 7

- A 14 year old girl with abdominal pain and vomiting was evaluated for GI diseases. Few days later she developed diplopia and the ophthalmologist measured her BP and was admitted in ICU with low Wt. and Ht. Final DX:ESRD

Case 8

- A 12 year old boy with sudden onset of irritability had BP of 180/120. BP was suddenly lowered to 120/80 and he became brain death.

Points that help to select the most proper drugs

- The underlying cause of HTN: AGN, NS, CRF, RVH
- Associated diseases: DM, Asthma, heart failure…..
- GFR
- Serum K
- CNS hemorrhage
- Severity of HTN
- Proteinuria


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General Points

- The lower the age and the higher the severity , the higher the possibility of secondary HTN.
- Symptomatic HTN is most probably secondary.
- Essential HTN rate is parallel to obesity (11-30% in obese children).
- Heritable portion of HTN (primary or secondary) is from 35-65%.

Causes of transient HTN

- Renal (AGN, HUS, Surgery, Renal TX)
- Acute hypovolemia (Burn, relapse of NS)
- CNS (trauma, tumor, infection, …)
- Endocrine (hypercalcemia, hyperthyroidism, hyperaldosteronom, pseudoaldosteronism)
- Drugs (steroids, sympathomimetics, contraceptive pills)

Causes of sustained HTN

- Renin-dependent (Renovascular, renal parenchymal disease, renal tumors)
- CRF
- Coarctation of aorta
- ↑Catecholamine (pheochromocytoma, neuroblastoma)
- ↑Corticosteroids (CAH, Cushing syndrome, …)
- Essential HTN

Renal diseases

- The most common cause of secondary HTN
- Renal and renovascular causes=90% of secondary causes.
- The most common renal disease in sustained secondary HTN is reflux – nephropathy (30-40%)
- The most common type of RVH fibromuscular dysplasia (70%)

Etiology and Age

- Infants: RV, congenital anomalies, PCKD, MCDK,HUS, ATN, COA, CAH.
- 1-6 yr: RPD, RV, endocrine diseases, COA, essential.
- 6-12 yr: RPD, essential, RV, endocrine diseases, COA.
- 12-18 yr: Essential, RPD, RV, endocrine diseases, COA.

Symptoms in infants

- CHF (56%)
- Respiratory distress (36%)
- FTT, vomiting (29%)
- Irritability (20%)
- Convulsion (11%)

Symptoms in older children

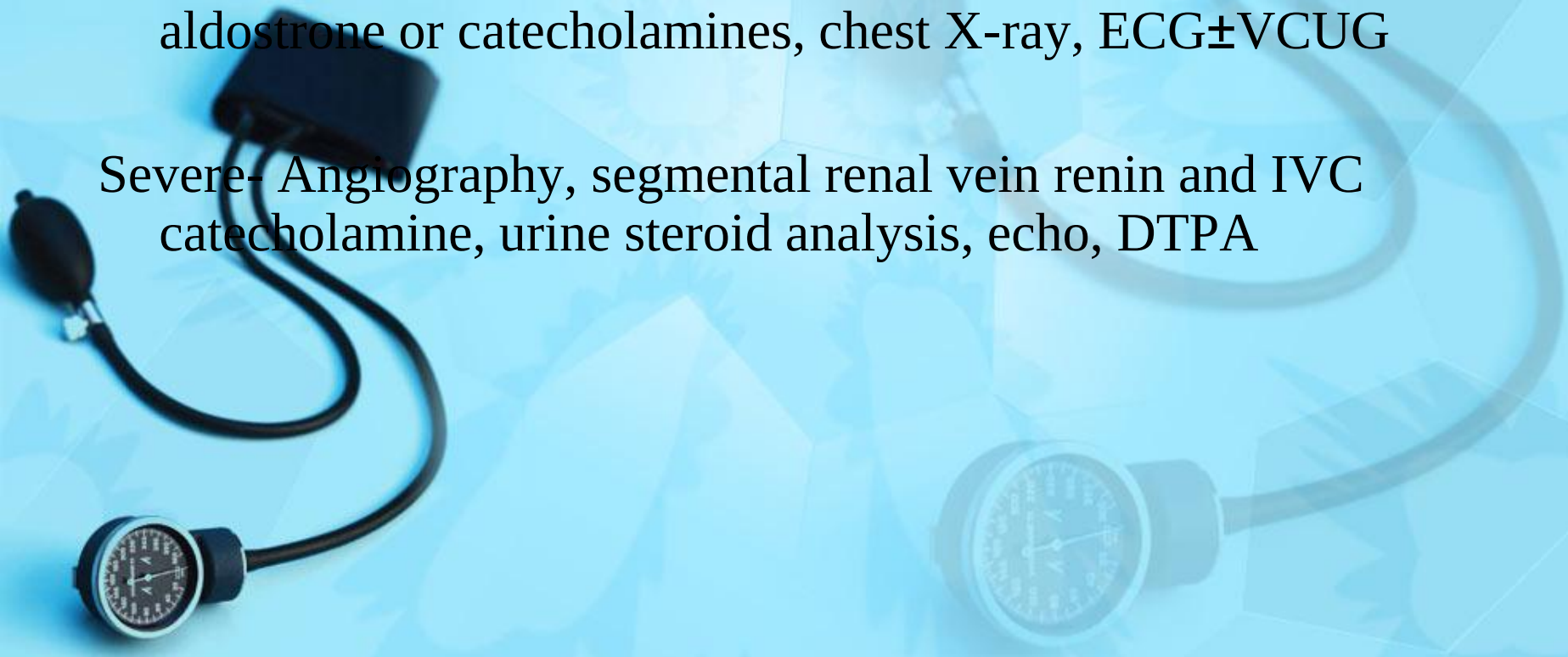
- Headache (30%)
- Nausea, Vomiting (13%)
- Hypertensive encephalopathy (10%)
- Polyuria, enuresis, visual defect, facial palsy, epistaxis, etc.

Investigations

Mild- CBC, BUN, creatinine, electrolytes, ca, uric acid, cholestrol, urinalysis

Moderate- Abdominal sono, DMSA scan, urine VMA, renin, aldostrone or catecholamines, chest X-ray, ECG±VCUG

Severe- Angiography, segmental renal vein renin and IVC catecholamine, urine steroid analysis, echo, DTPA



Guidelines for drug treatment

- In children with stage 1 essential HTN without evidence of target-organ damage, nonpharmacologic therapy is the initial intervention. If BP target goals are not met within four to six months after initial therapy (ie, BP below the 95th percentile), pharmacologic therapy is suggested.

Drug management of HTN

- The management of antihypertensive therapy is based upon the following considerations :
- First-line drug therapy should combine efficacy with minimum side effects. Starting doses should be the lowest known effective dose.
- If the target blood pressure goal is not met, a second drug from a different class is added when the initial drug dose reaches the highest recommended level or if the patient begins to experience side effects from the initial drug.
- To improve compliance, long-acting agents should be used whenever possible.

The last Slide

Thank You for your attension