

Hypertension

CVS2

Hisham Al Khalidi

Hypertension

Definition

- No rigid definition
 - However, hypertension (HTN) is usually considered when there is :
 - A sustained diastolic pressure greater than 89 mm Hg
- OR**
- A sustained systolic pressure in excess of 139 mm Hg

Hypertension

Risk factors *

- **Hereditary**
- **Race.** African-Americans
- **Gender.** Men & postmenopausal women
- **Age**
- **Obesity**
- **Diet, particularly sodium intake**

Other factors associated with HTN include:

- **Heavy alcohol consumption**
- **Diabetes**
- **Use of oral contraceptives**
- **Sedentary or inactive lifestyle**

Hypertension

Types and causes

- *Essential Hypertension (90-95%)*
- *Secondary Hypertension*

Hypertension

Types and causes

- ***Secondary Hypertension***

- **Renal:**

- Acute glomerulonephritis
 - Chronic renal disease
 - Polycystic disease
 - Renal artery stenosis
 - Renal artery fibromuscular dysplasia
 - Renal vasculitis
 - Renin-producing tumors

- **Endocrine:**

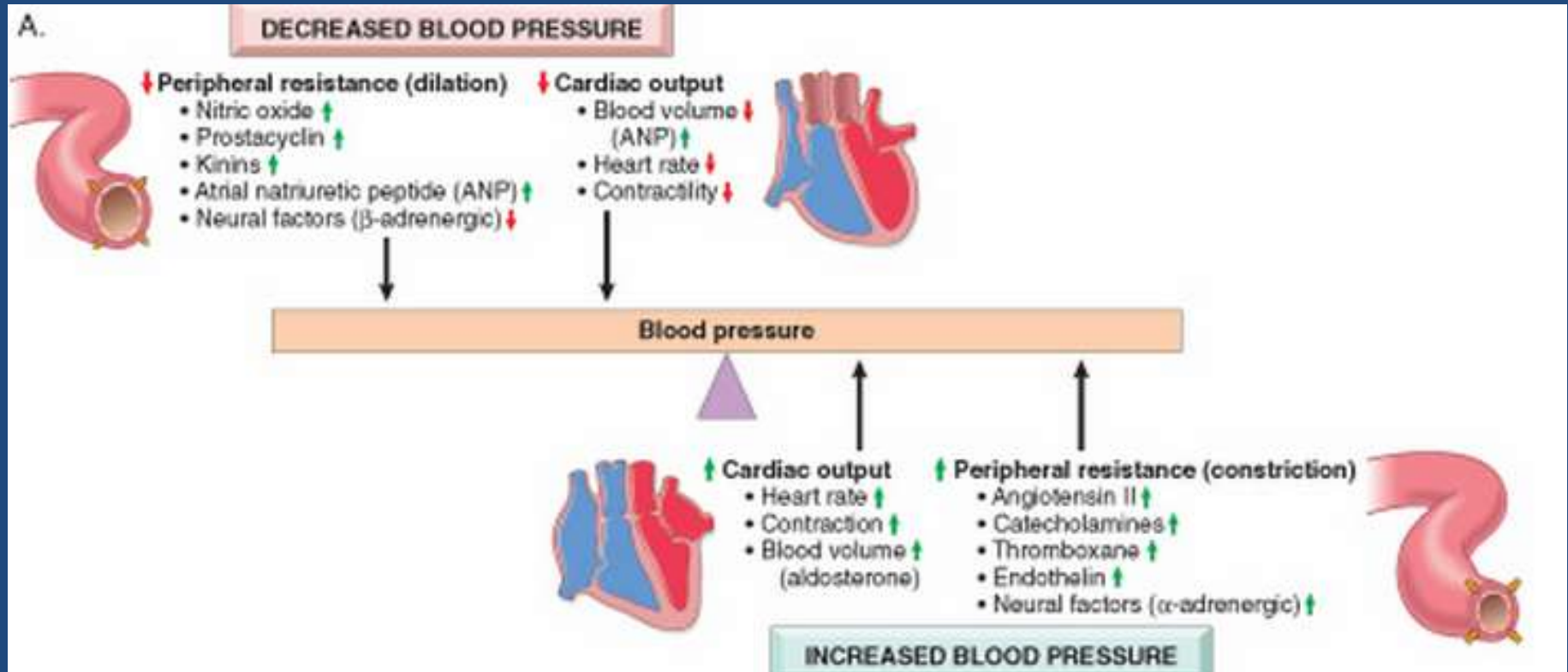
- Adrenocortical hyperfunction (Cushing syndrome, primary aldosteronism, congenital adrenal hyperplasia which is an example of gene defect affecting aldosteron metabloism)
 - Exogenous hormones (glucocorticoids, estrogen [including pregnancy-induced and oral contraceptives] and sympathomimetics)
 - Pheochromocytoma
 - Acromegaly
 - Hypothyroidism (myxedema)
 - Hyperthyroidism (thyrotoxicosis)
 - Pregnancy-induced

Hypertension

Types and causes

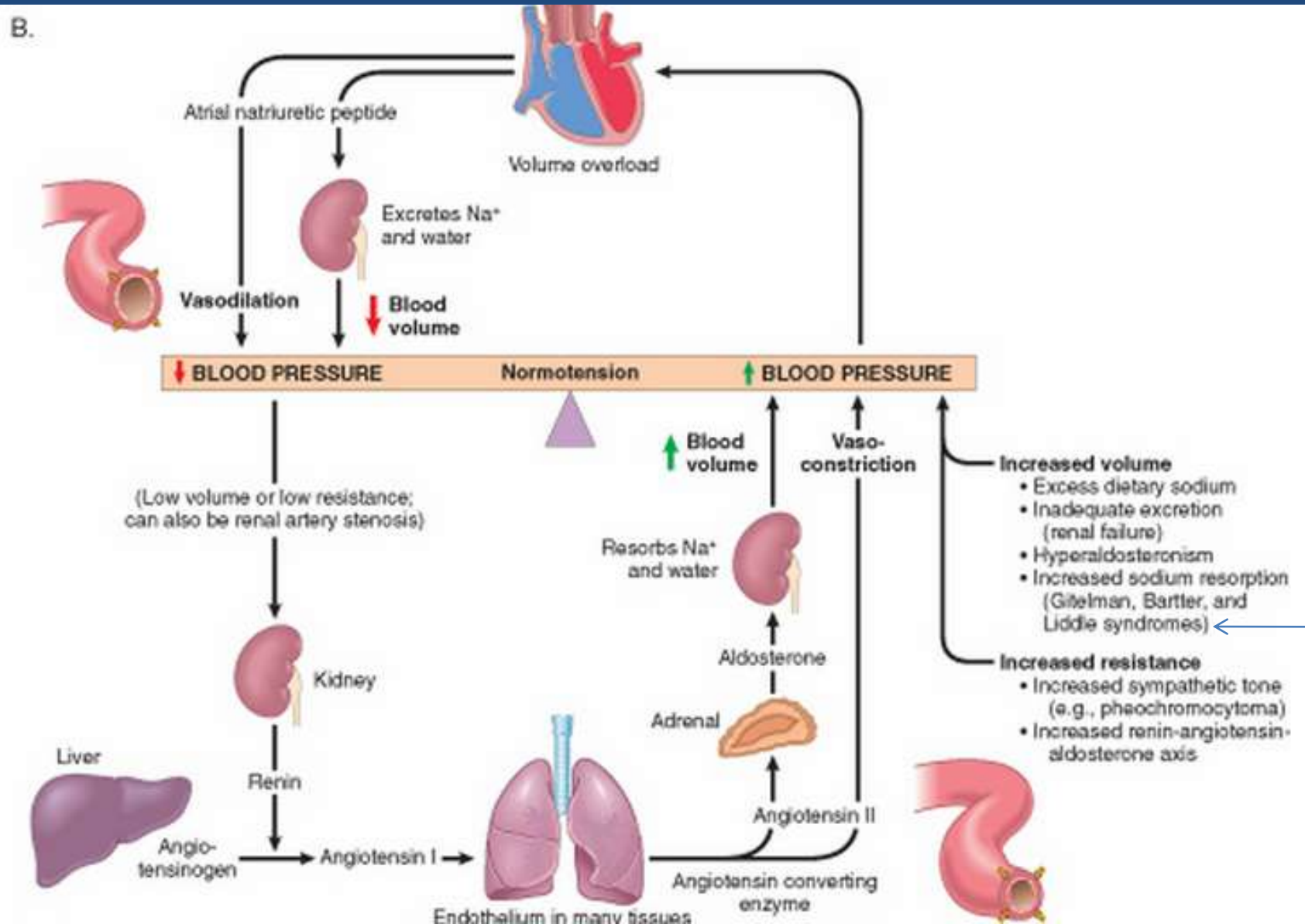
- Cardiovascular:
 - Coarctation of aorta
 - Polyarteritis nodosa (or other vasculitis)
 - Increased intravascular volume
 - Increased cardiac output
 - Rigidity of the aorta
- Neurologic
 - Psychogenic
 - Increased intracranial pressure
 - Sleep apnea
 - Acute stress, including surgery

Blood pressure regulation



- Blood pressure is a function of cardiac output and peripheral vascular resistance → two hemodynamic variables that are influenced by multiple genetic, environmental, and demographic factors*

Renin-angiotensin-aldosterone and atrial natriuretic peptide rule



Hypertension

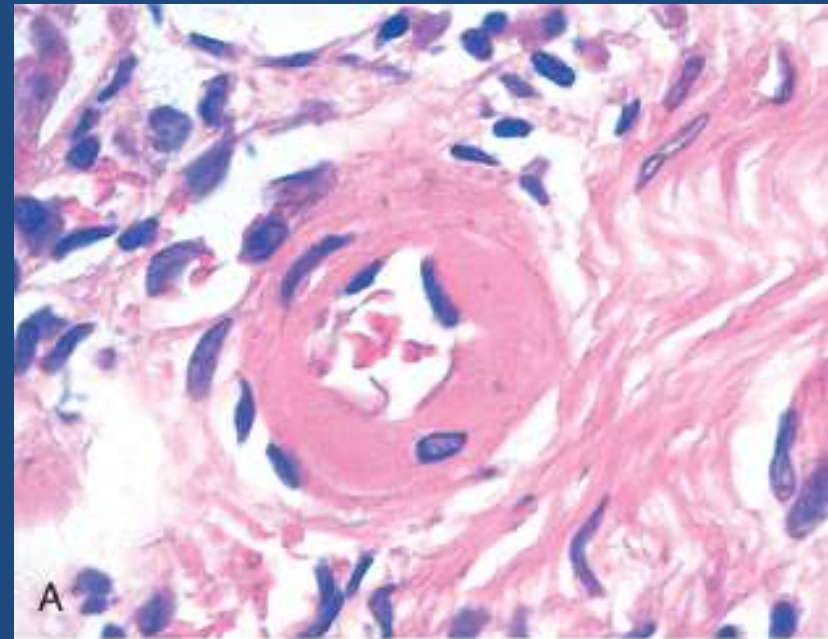
Remember!

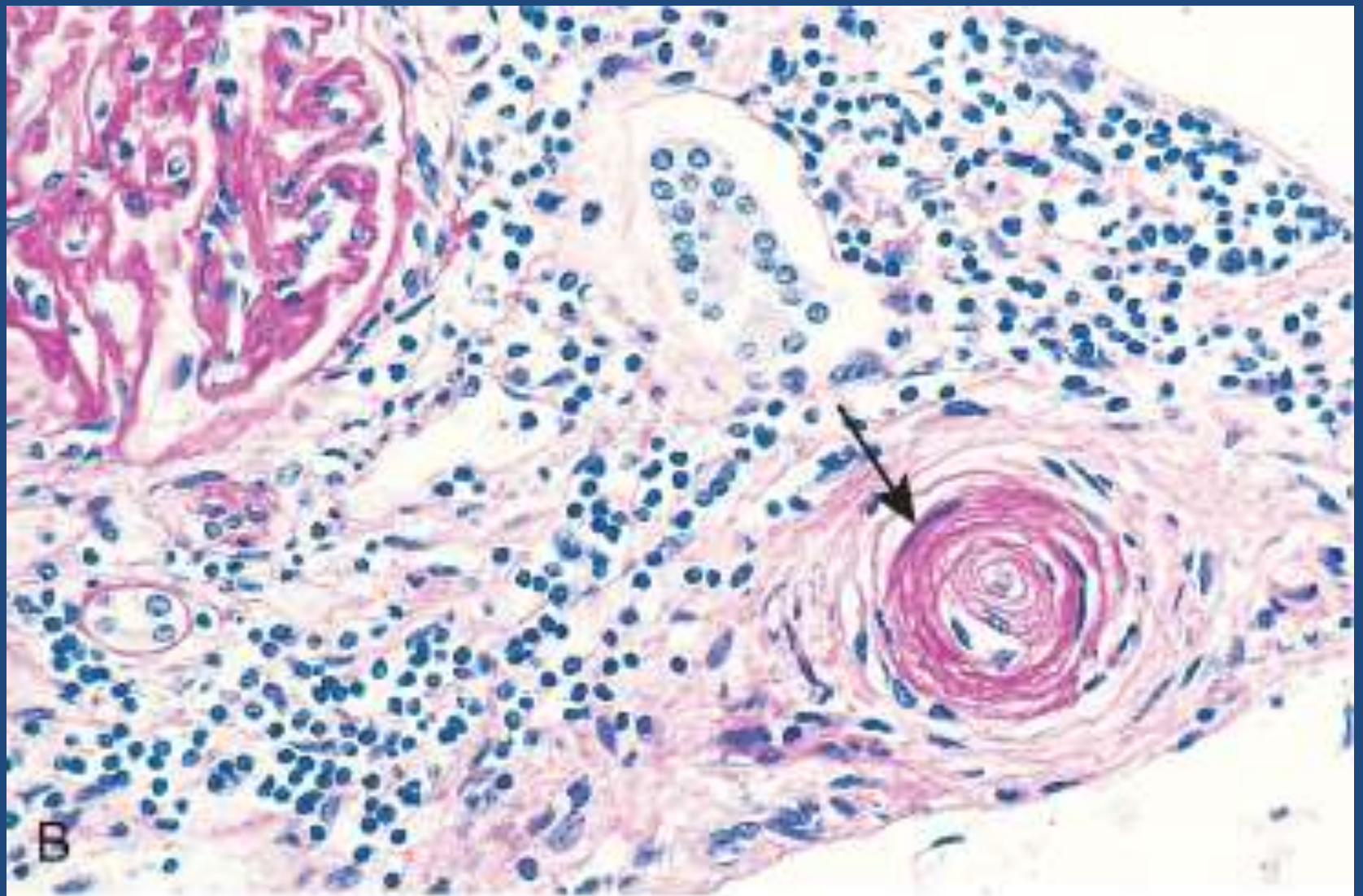
- Peripheral resistance is regulated predominantly at the level of the arterioles
- ***Reduced renal sodium excretion*** in the presence of normal arterial pressure is probably a key initiating event; it is a final common pathway for the pathogenesis of most forms of hypertension

Hypertension

Vascular pathology

- Accelerate atherogenesis
- Arteriosclerosis (particularly in the kidney), lead to thick wall and narrow lumen
- It can be either:
 - Hyaline
 - Hyperplastic (in malignant HTN)





B

© Elsevier 2005

Malignant hypertension

- A clinical syndrome
- 5% of hypertensive persons
- diastolic pressure over 120mmHg, with:
 - renal failure
 - retinal hemorrhages and exudates, with or without papilledema

Hypertension

Major complications *

- Coronary heart disease
- Cerebrovascular accidents
- Cardiac hypertrophy and heart failure
(*hypertensive heart disease*)
- Aortic dissection
- Renal failure
- Retinopathy

Hypertension

Systemic hypertensive cardiac disease

- History of hypertension or extracardiac anatomical evidence of HTN
- LVH: concentric with absence of other cause of LVH
- The free LV wall is $> 2\text{cm}$ and the weight of the heart is > 500 grams
- Long-term: dilatation and wall thinning
- Treatment of HTN helps recovery

