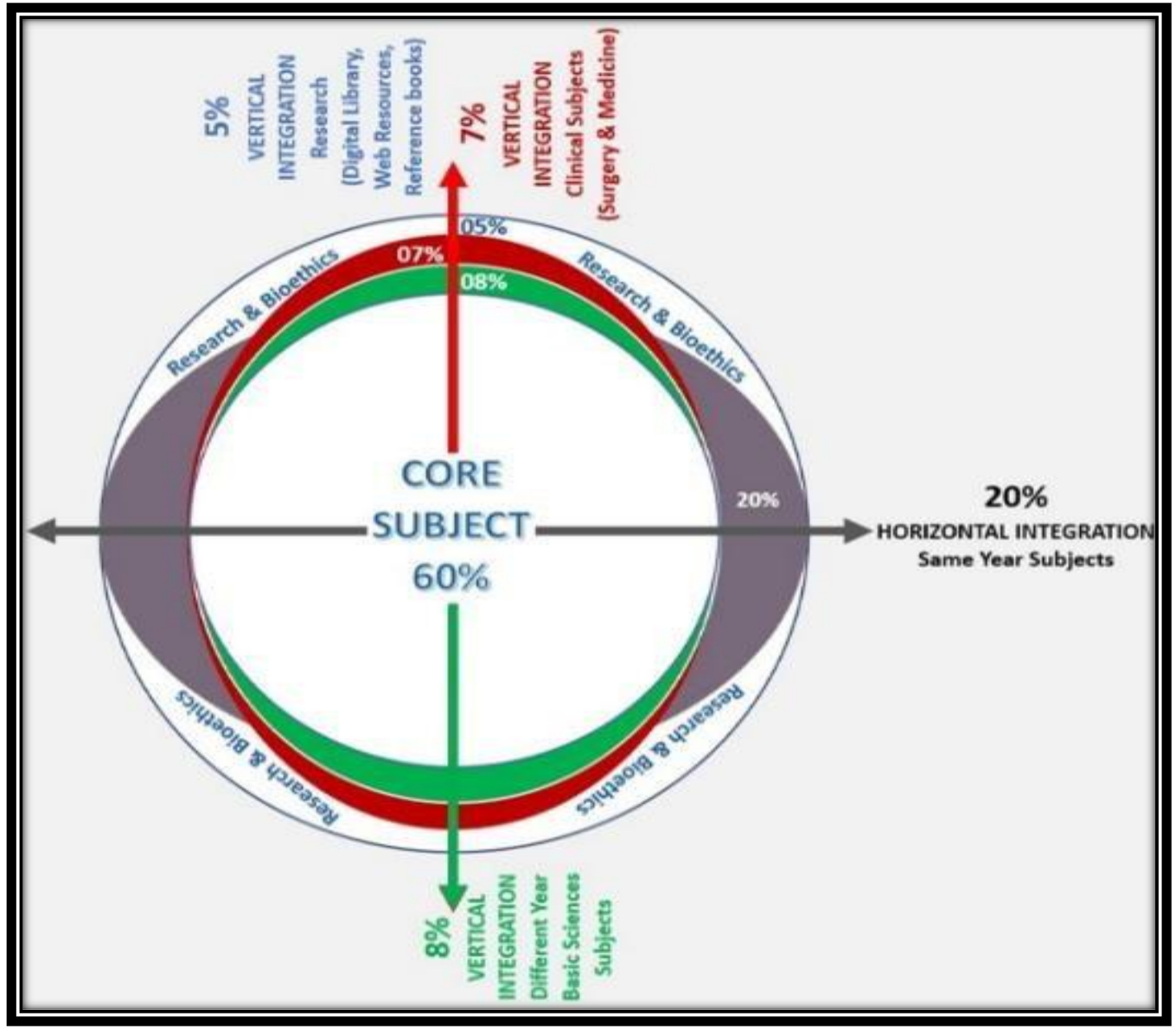
Case Vignette

A 37-year-old female presented to the emergency room reporting of palpitations, shortness of breath and headache. While all symptoms were sudden in onset, the patient had never experienced palpitations or any difficulty breathing in the past. She was being managed in an outpatient setting for hypokalemia and hypertension since 2009.

On physical examination, her heart rate was 110 bpm while the blood pressure was 170/110 mm Hg. Cardiac, abdominal, neurological and musculoskeletal examinations were unimpressive with no signs of clubbing or oedema. Initial investigations revealed normal hematological and renal parameters but showed sodium 135 mmol/L and potassium 2.5 mmol/L.

Primary Hyperaldosteronism

DR. NIDA ANJUM,AP, MU-II, HFH


5%
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LECTURE CONTENT ANALYSIS	
CORE CONTENT	60%
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Learning Objectives

At the end of this lecture students should be able to:

1: Define Primary and Secondary Hyperaldosteronism.

2: Describe the pathophysiology and Etiology of Hyperaldosteronism.

3: Describe the clinical features of Hyperaldosteronism.

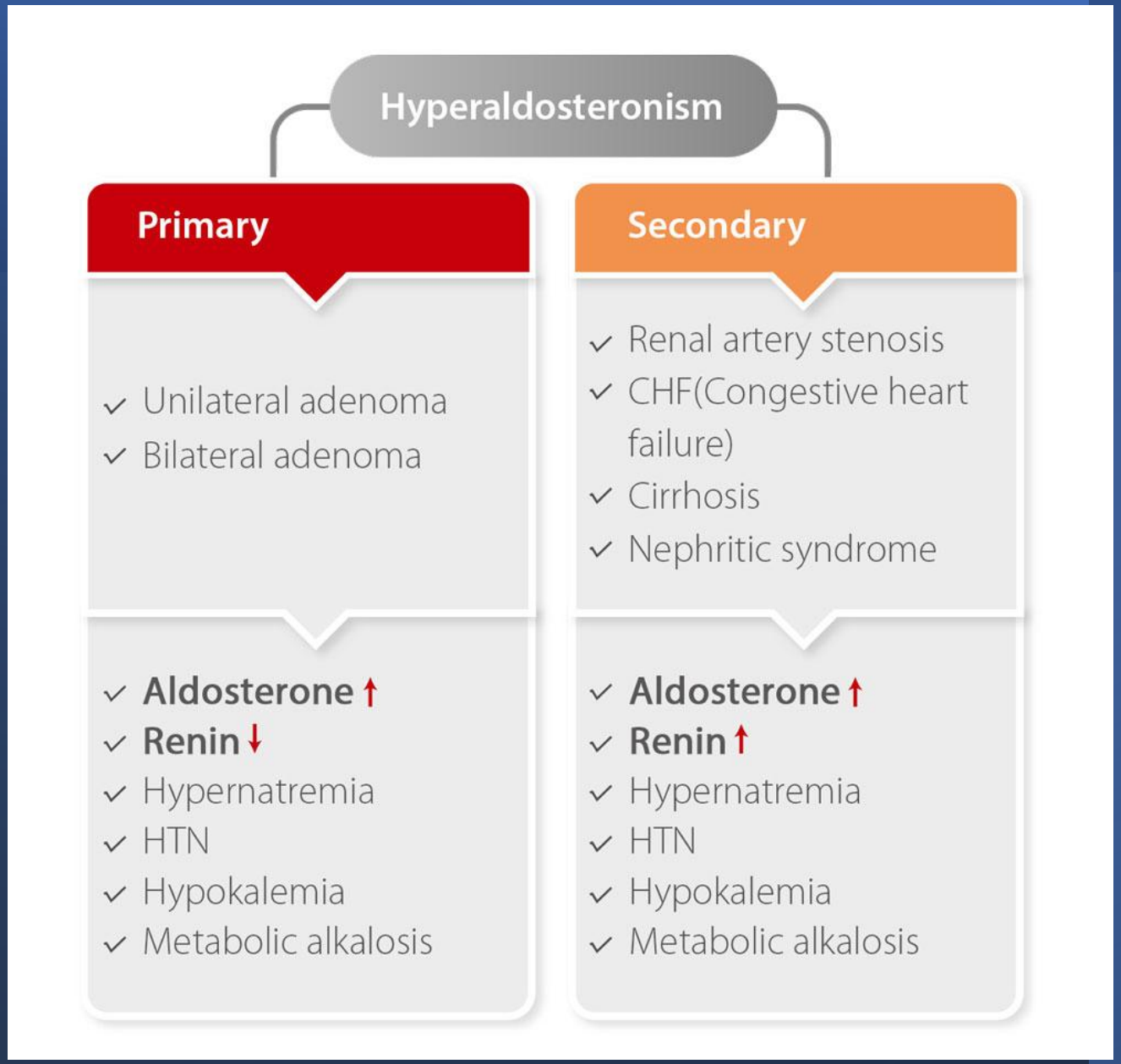
4: Numerate the Laboratory investigations for the diagnosis of Hyperaldosteronism.

5: Describe the management plan.

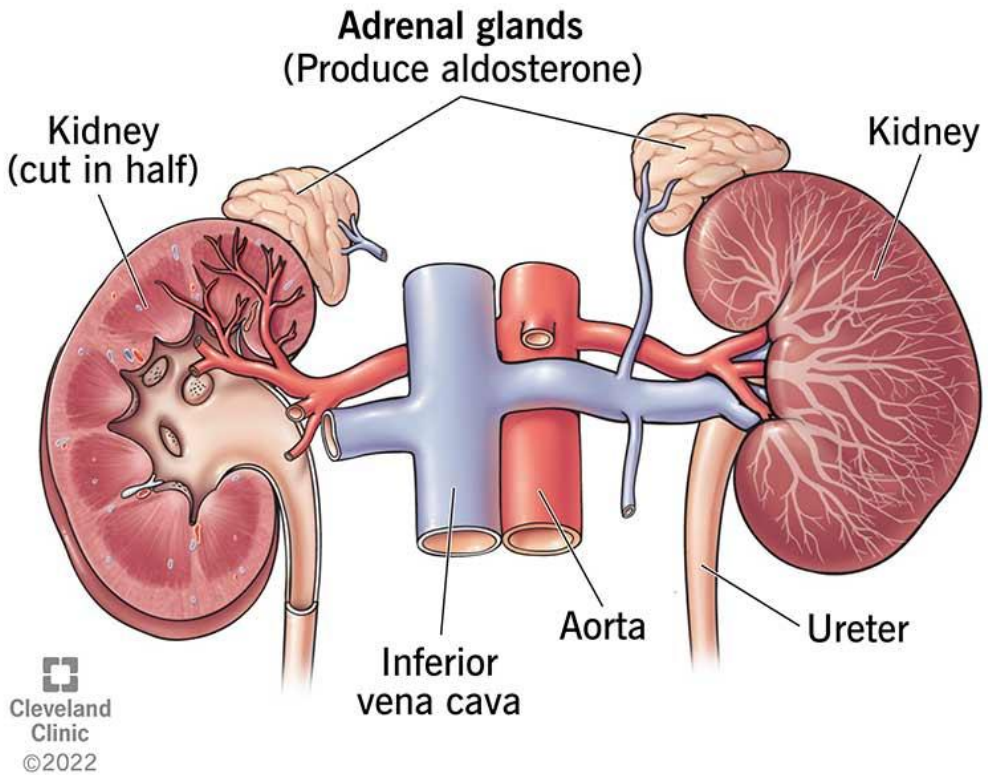
Definition

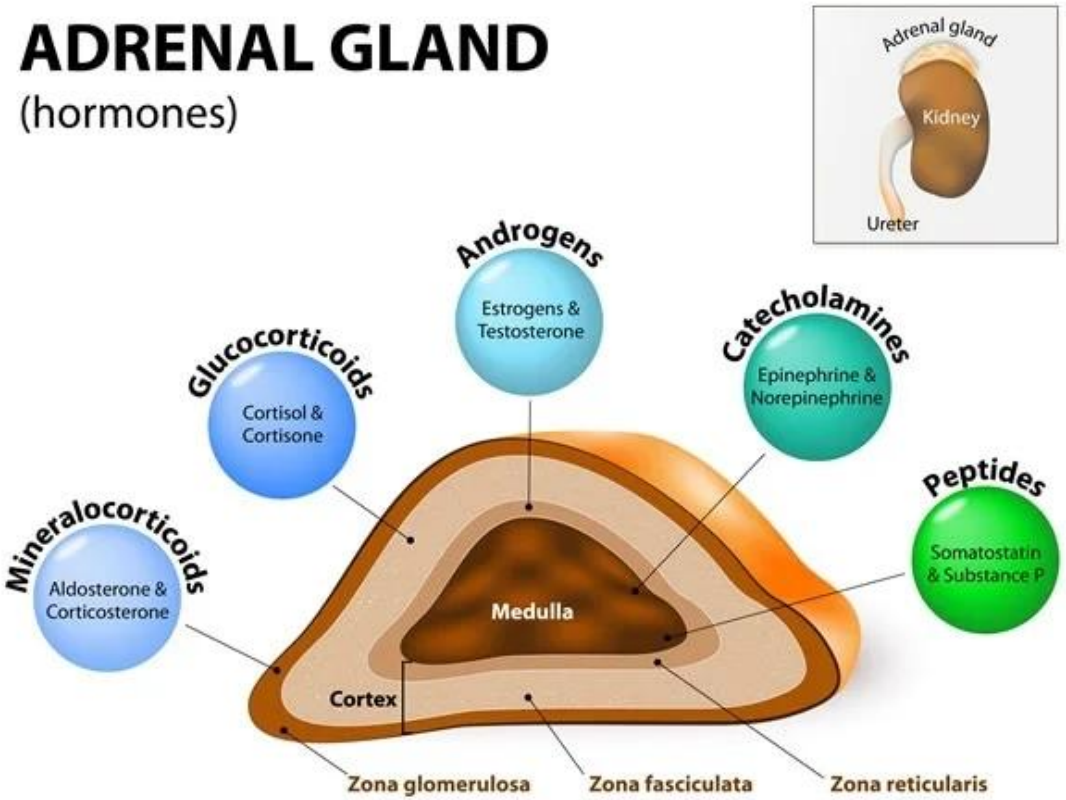
Primary Aldosteronism (PA) is caused by excessive secretion of aldosterone from the adrenal glands.

Secondary Aldosteronism is increased adrenal production of aldosterone in response to nonpituitary, extra-adrenal stimuli such as renal hypoperfusion.


Hyperaldosteronism
Primary
Unilateral adenoma
Bilateral adenoma
Aldosterone ↑
Renin ↓
Hypernatremia
HTN
Hypokalemia
Metabolic alkalosis
Secondary
Renal artery stenosis
CHF(Congestive heart failure)
Cirrhosis
Nephritic syndrome
Aldosterone ↑
Renin ↑
Hypernatremia
HTN
Hypokalemia
Metabolic alkalosis

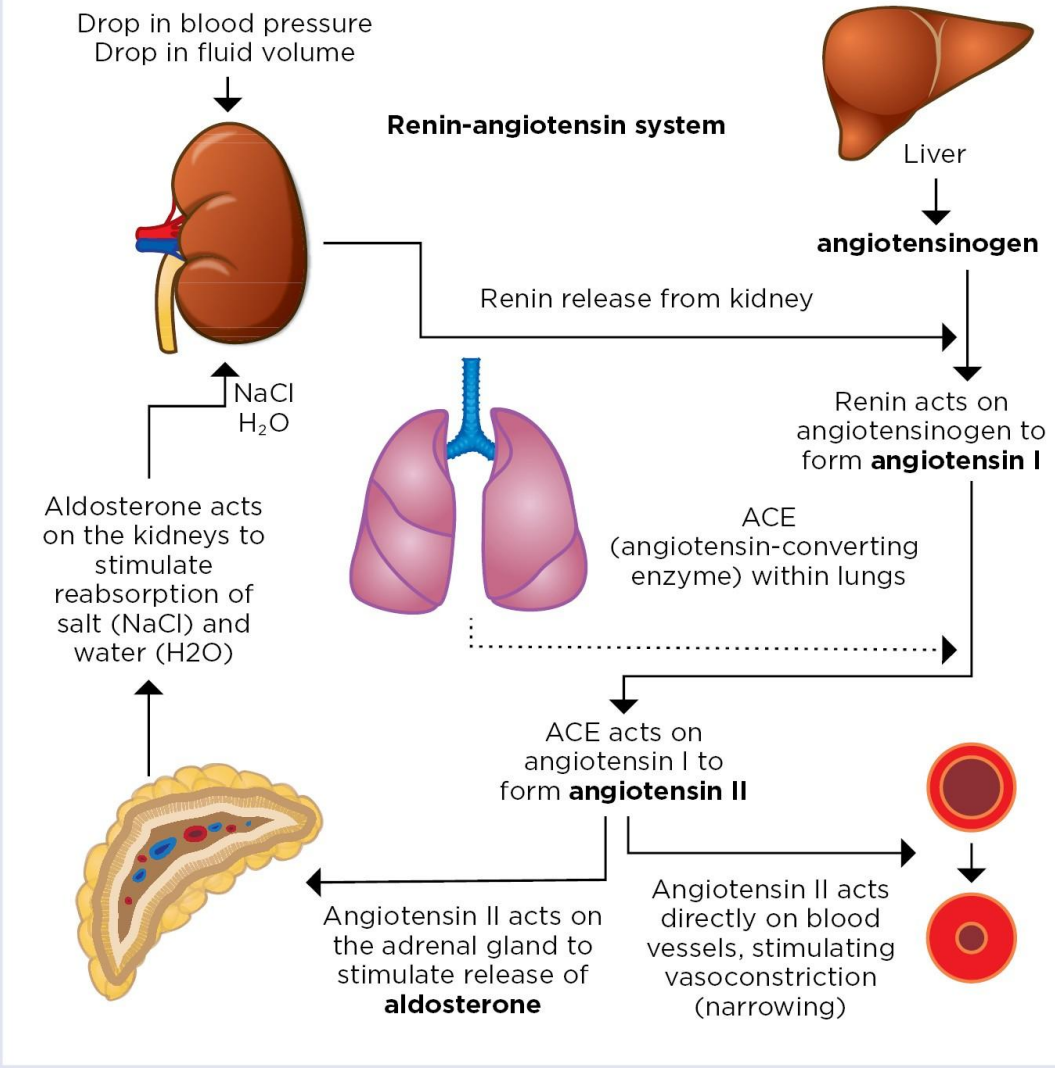
Structure of Adrenal Gland





Normal Function of Aldosterone

Fig 2. **Renin angiotensin aldosterone system**



Etiology of Primary Hyperaldosteronism

Causes of primary hyperaldosteronism	Frequency (%)
Idiopathic hyperaldosteronism	65
Aldosterone-producing adenoma	30
Primary unilateral adrenal hyperplasia	3
Aldosterone-producing adrenocortical carcinoma	<1
Aldosterone-producing ovarian tumor	<1
Familiar hyperaldosteronism	<1

Epidemiology of Hyperaldosteronism

CLINICAL PRACTICE ARTICLE

Frequency of Primary Hyperaldosteronism in Young Hypertensives in a Tertiary Care Setting of Rawalpindi

Mehwish Gilani[1], Naveed Asif[1], Asif Nawaz[1] and Ammad Akram[2]

ABSTRACT

Objective: To determine the frequency of primary hyperaldosteronism in young hypertensives in hospital settings of Rawalpindi.

Study Design: Cross-sectional study.

Place and Duration of Study: Department of Chemical Pathology and Endocrinology, Armed Forces Institute of Pathology (AFIP), Rawalpindi, from June 2016 to May 2017.

Methodology: Two hundred and fifty patients with hypertension (blood pressure of more than 140/90 mm Hg) of both genders, with age between 17-40 years were recruited in the study. Patients on anti-hypertensive medications, renal function derangement, pregnant females and those labelled with secondary hypertension were excluded. Blood samples were taken for the analyses of plasma renin, aldosterone, electrolytes, and blood gases. Parametric quantitative variables were presented as mean ± SD.

Results: Eight cases, out of a total 80 subjects fulfilling the inclusion criteria, were diagnosed with primary hyperaldosteronism and 72 with essential hypertension. Mean age of patients having primary hyperaldosteronism was 29.25 ±7.1 years. The mean diastolic blood pressure of all patients was 90.3 ±6.5 mm of Hg, while mean systolic blood pressure was 142.7 ±10.5 mm of Hg.

Conclusion: Frequency of primary hyperaldosteronism was found to be 10%, emphasising on the fact that it is not very uncommon in young hypertensives.

ELSEVIER

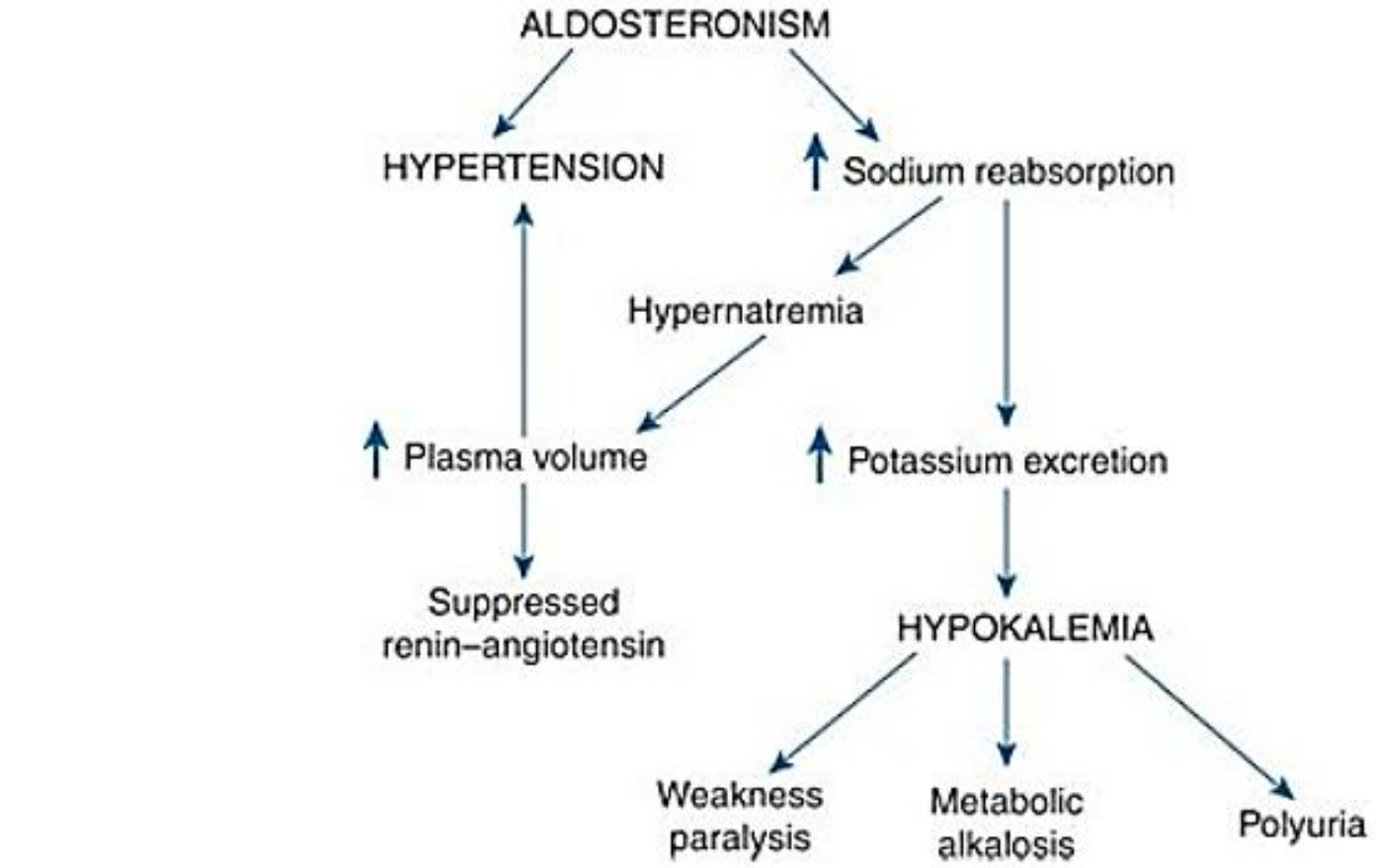
Journal of the American College of Cardiology
Volume 69, Issue 14, 11 April 2017, Pages 1811-1820

Original Investigation

Prevalence and Clinical Manifestations of Primary Aldosteronism Encountered in Primary Care Practice

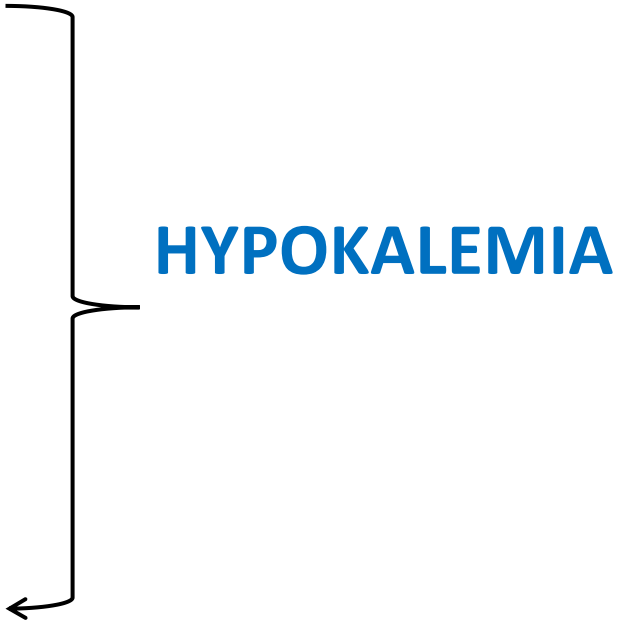
A total of 1,672 primary care patients with hypertension (569 newly diagnosed and 1,103 patients already diagnosed with arterial hypertension) were included in the study. A total of 99 patients (5.9%) were diagnosed with PA

Pathophysiology of Hyperaldosteronism



Clinical Features

- **Uncontrolled hypertension**
- Severe muscle weakness
- Palpitations
- Fatigue
- Muscle cramps
- Polyuria and polydipsia



Screening criteria for Primary Hyperaldosteronism

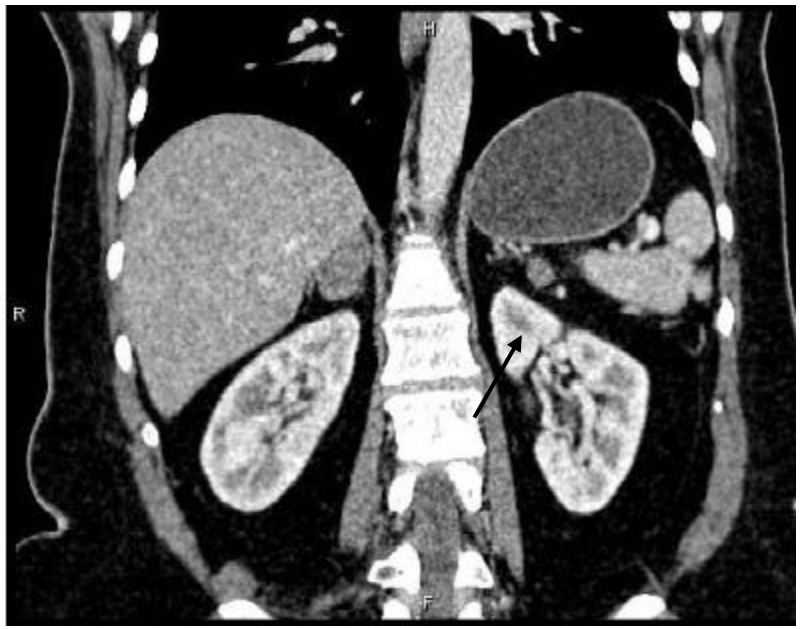
- Resistant Hypertension
- Hypertension associated with hypokalemia.
- Hypertension before the age of 40.
- Adrenal incidentaloma

Laboratory Investigation for diagnosis

- **Screening test**: ↑ Aldosterone/plasma renin activity.
- **Confirmation of diagnosis:** Failure to suppress aldosterone in face of sodium/volume loading.

1) Saline Infusion test
2) Fludrocortisone suppression test
3) Dietary Sodium loading test

Imaging for finding the underlying cause



Adrenal Adenoma

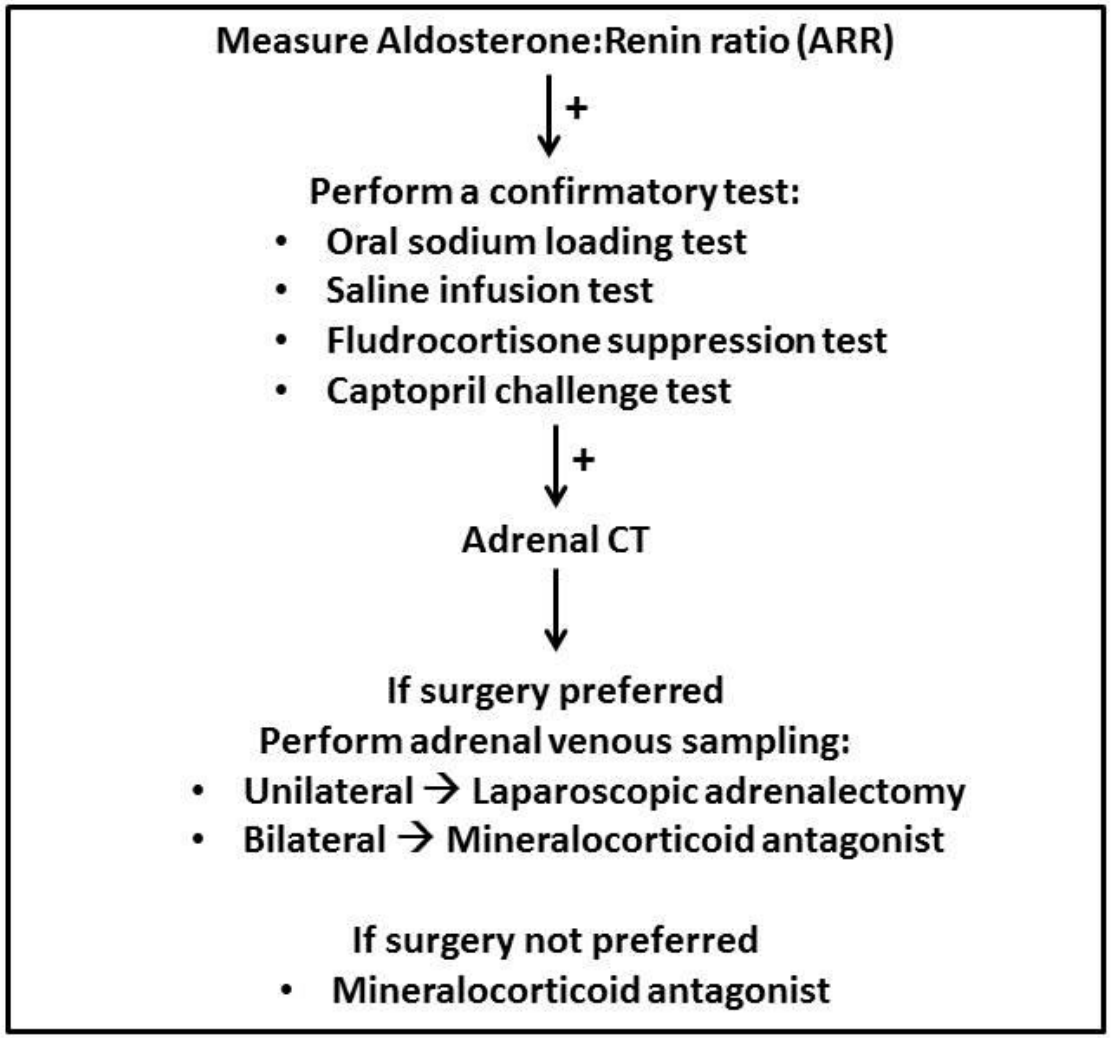
Bilateral Adrenal Hyperplasia

Management

- Surgical Intervention: Adrenalectomy ⟶ Adrenal Adenoma
- Medical treatment: Bilateral Adrenal Hyperplasia

❖ Mineralocorticoid receptor antagonist, e.g., Spironolactone.

Steps to take when presented with hypertensive patient with increased risk of PA



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REVIEW ARTICLE | Originally Published 24 July 2024 | 100

Check for updates

Clinical Management of Primary Aldosteronism: An Update

Gian Paolo Rossi, Federico Bernardo Rossi, Chiara Guarnieri, Giacomo Rossitto, and Teresa M. Seccia | AUTHOR INFO & AFFILIATIONS

Hypertension • Volume 81, Number 9 • https://doi.org/10.1161/HYPERTENSIONAHA.124.22642

9,316 / 7

PDF/EPUB

Ethical Issue	Key Concerns
Informed Consent and Patient Education	Ensuring patients understand the chronic nature of PHA, available treatments (e.g., adrenalectomy, mineralocorticoid receptor antagonists), and potential complications.
Diagnostic Uncertainty and Misdiagnosis	Ethical challenges in differentiating PHA from essential hypertension; risks of delayed or incorrect diagnosis.
Equity in Access to Care	Ensuring availability of diagnostic tests (e.g., aldosterone-renin ratio, adrenal vein sampling) and treatment options across all populations.
Overtreatment and Harm Prevention	Avoiding unnecessary interventions or long-term medication use in patients with borderline or subclinical cases.

Thank you