

Hyperaldosteronism - First Line Investigation of Suspected Hyperaldosteronism - Summary Clinical Guideline

Reference No: CHISCG6

Guideline for measurement of plasma renin and aldosterone

INDICATIONS

This test is indicated in the differential diagnosis of secondary hypertension.

- Hypertension and hypokalaemia (spontaneous or diuretic induced)
- Resistant hypertension (≥ 150 mm Hg resistant to 3 conventional antihypertensive drugs)
- Adrenal "incidentaloma" ≥ 10 mm and hypertension
- Hypertension with a Family history of primary hyperaldosteronism
- Hypertension onset or Stroke before 40 years of age

PREPARATION

Patient

- Give potassium replacement (Slow K or Sando-K tabs) sufficient to raise serum potassium into reference range (3.5 – 5.3 mmol/L)
- Patients should be normally hydrated and have an adequate oral intake of sodium
- Patients should be ambulatory for at least 120 minutes before the test (performing usual activities), however samples are best taken between 08:00 and 10:00 during the diurnal peak of aldosterone secretion and after 5-15 mins of sitting.

Stopping medications: The table below indicates drugs which can interfere with renin and/or aldosterone measurements. Most antihypertensives are implicated but α -adrenoceptor blockers (eg Doxazosin), slow release Verapamil and Hydralazine are thought to have minimal effects. Ideally all drug therapy should be stopped at least 2-3 weeks before testing, but this is not generally practical. The test does not give useful results in patients treated with spironolactone or eplerenone.

A pragmatic approach is to stop spironolactone and eplerenone in order to send an initial aldosterone:renin ratio sample. Then if necessary stop or switch all other medication in order to perform the test under ideal test conditions. If the initial results are suggestive of primary hyperaldosteronism, then secondary confirmatory tests for primary hyperaldosteronism can be carried out at the same time as repeating the renin:aldosterone ratio under ideal conditions.

When stopping antihypertensives for testing, replacement with Doxazosin and then calcium channel blockers are often appropriate.

Please be sure to include details of all current drug therapy on the request form.

Drug	Physiological effect	Potential effect on interpretation	Time to remove interference
Spirolactone	Increases renin, variable effect on aldosterone	Uninterpretable	6 weeks
Eplerenone / Amiloride	Increases renin, variable effect on aldosterone	Uninterpretable	2 weeks
Oestrogens	Increase renin substrate	False negative	2 weeks
ACE / AR2B inhibitors	Increase renin and reduce aldosterone	False negative	2 weeks
Beta-blockers	Reduce renin more than aldosterone	False positive	2 weeks
Diuretics	Increase renin and aldosterone	Variable	2 weeks
Hypokalaemia	Inhibits aldosterone secretion	False negative	1 week
NSAIDs	Retain sodium and reduce renin, ?effect on aldosterone	False positive	2 weeks

Equipment

Blood collection tubes: 1x yellow top tube: for U&E
 1x 4ml EDTA (purple top): for renin and aldosterone

PROCEDURE

1. Samples for renin are stable for 6 hours at room temperature.
2. Take blood samples and place in RED BAG and transfer immediately to the lab.

INTERPRETATION

Plasma Renin reference ranges (mIU/L)

Supine – <59.7
Ambulant – 5.3 – 99.1

Plasma Aldosterone reference ranges (pmol/L)

Supine – 103 - 859
Ambulant – 103 - 1197

Aldosterone / Renin Ratio (ARR)

Raised ARR (>30 pmol/mIU) suggests possible primary hyperaldosteronism.

Interpretative comments are included on reports. For further information on result interpretation and further testing see the full guideline.