

Aldosterone and Renin

Synonyms

Aldo, Renin, A/R ratio, renin-angiotensin

Clinical Indication

Investigation of suspected disorders of aldosterone production, for example primary hyperaldosteronism and hyporeninaemic hypoaldosteronism. Aldosterone / Renin ratio is used as a screening test.

Studies will only be undertaken on In-patients if requested by Consultant Nephrologists / Endocrinologists or if agreed with Consultant Biochemist. Outpatient requests should only be undertaken on the following:

1. Patients with severe hypertension who do not respond to three or more conventional antihypertensives
2. Hypertensives with spontaneous or diuretic induced hypokalaemia
3. Hypertensive and adrenal incidentaloma
4. Hypertensive and sleep apnoea
5. Diagnosis / differentiation between, primary and secondary causes of hyper- or hypoaldosteronism
6. Family history of early onset hypertension or cerebrovascular incident <40 years
7. All hypertensive first degree relatives of patients with primary hyperaldosteronism
8. Management of renal artery stenosis (renin)
9. Diagnosis and location of renin secreting tumours (renin)

Please ensure that all relevant clinical details (e.g. blood pressure) and current medication is noted on the request form. Failure to give adequate clinical information will delay sample analysis. If you are unsure please discuss with the duty biochemist prior to submitting the request.

Samples would not normally be sent if the patient is on a beta blocker or another interfering medication.

Part of Profile / See Also

Request Form

Combined Pathology manual Blood form or ICE request

Availability / Frequency of Analysis

Referred test: Analysed by Biochemistry, Charing Cross Hospital ([8673](#)), if specific criteria met.

Turnaround Time

1 month

Patient Preparation

This test should be performed as an out-patient procedure. There are a number of drugs that interfere with the aldosterone / renin axis. Patients must attend Basildon or Southend Hospital phlebotomy for sample collection. Ideally, samples should be collected in the morning after the patient has been out of bed for ≥ 2 hours and after sitting 5-15 minutes.

Sample Requirements

Specimen Type

EDTA plasma preferred. Heparin (green top) accepted. SST for concurrent UE results.

Volume

2 ml (aldosterone) and 5ml (renin)

Container



7ml EDTA (purple top) tube



Or Lithium heparin tube

And yellow top (SST)



For children less than 12 years of age a minimum of one full paediatric EDTA (red top - Sarstedt tube)



And one full paediatric lithium heparin (Orange top – Sarstedt tube)



Or lithium heparin (pale green top – BD Microtainer tube)



Samples must be transported to the laboratory immediately.

Reference Range & Units

Renin Adult (random) = 0.5 – 3.5 nmol/L/h

Aldosterone Adult (random) = 90 – 700 pmol/L

If the ratio of aldosterone (pmol/l) to renin (pmol/ml/h) is greater than 1700, plasma renin ≥ 0.3 pmol/ml/hr and plasma aldosterone above 275 pmol/L, the patient almost certainly has primary hyperaldosteronism (Conn's).

If the ratio is between 850 and 1,700 and patient was on anti-hypertensives affecting the aldosterone-renin system then change to an alpha-blocker and repeat the test after at least 2 weeks (6 weeks if spironolactone is to be discontinued). Consider retesting using the overnight inpatient protocol. If the ratio is less than 680 then this is normal.

Interferences

Interpretation & Clinical

Comprehensive interpretive comment is provided by referral laboratory.

Decision Value (if applicable)

References

<http://pathology.imperial.nhs.uk/index.php?page=aldosterone-and-renin>

Test code

ALDO and RENI (typing in one code will automatically add the other code)

Lab Handling

Sample must be processed at the ESL. SST (Serum) is for UE analysis in house (not to be frozen). Centrifuge EDTA (or lithium heparin) sample and aliquot at

least 1ml into 3 separate tubes and freeze at -20C in referrals rack. Ensure sample type is written on all aliquots. Two samples are sent and one is retained in storage. Samples are couriered at -20C to Charing Cross by Global courier.



8673

**Accredited to
ISO 15189:2012**