

Department:	Biochemistry		
Site	All sites	Revision No:	4
Document title:	Endocrine Dynamic Function Test Protocols - Adults		

Saline Infusion Test for Hyperaldosteronism

The principle of this test is that in hyperaldosteronism, control of aldosterone secretion is lost and is not suppressed in response to an excessive salt and water load.

Indications

This test is a second line test for the diagnosis of primary aldosteronism.

Patients should already have been screened with a random Aldosterone:Renin Ratio (ARR) > 1000

Contraindications

This test should not be performed in patients with any of the following

- severe uncontrolled hypertension
- renal insufficiency
- cardiac insufficiency
- cardiac arrhythmia
- severe hypokalaemia

Requirements

- 2L 0.9% saline for IV administration
- infusion pump/giving set
- 2 indwelling catheters
- 2 pink top EDTA for plasma renin and aldosterone
- 2 brown top serum tubes
- Blood samples should be taken immediately (within 30 minutes) to the laboratory but not on ice as PRA (plasma renin activity) is measured by the activity of renin and at 4°C the inactive renin precursor is maximally converted to active renin.

Procedure

PATIENT PREPARATION

- Stop mineralocorticoid receptor antagonists (spironolactone and eplerenone) for 6 weeks before the test
- Stop diuretics 4 weeks before the test.
- Stop beta blockers, calcium channel antagonists, ACE inhibitors and AT2 blockers for 2 weeks before the test.
- Can continue to use alpha blockers to manage hypertension. Alternative antihypertensives that can be taken are doxazosin, slow release verapamil, hydralazine with slow release verapamil (to avoid reflex tachycardia)
- Ensure plasma K in normal range (ideally >4) prior to performing test
- Examine patient for signs of cardiac failure. Check BP.

Author:	Katharine Hayden	Document No:	BC-CL-PR-16
Approved by:	Anne-Marie Kelly	Page 11 of 47	

Department:	Biochemistry		
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TEST

- Position patient in seated position for at least 30 minutes prior to commencing procedure and sampling. The patient should remain seated throughout test.
- Blood pressure, oxygen saturation and heart rate are monitored hourly throughout the test.

Time (Minutes)	Procedure	Samples
-15	Site indwelling cannula for administration of 0.9% Saline infusion and cannula in opposite arm for blood sampling and leave for 30 mins	
0	Take sample for Aldosterone, Plasma renin activity and U and E's	1 x pink top EDTA tube (renin and aldosterone) NOT ON ICE NB. send sample immediately as must be received in laboratory within 30mins 1 x brown top serum (U and E's)
0	Commence Infusion of 2L 0.9% saline over 4 hours	
240	STOP INFUSION	
240	Take sample for Aldosterone, Plasma renin activity and U and E's	1 x pink top EDTA tube (renin and aldosterone) NOT ON ICE NB. send sample immediately as must be received in laboratory within 30mins 1 x brown top serum (U and E's)

Interpretation of results¹

The lack of suppression of aldosterone excretion with intravascular expansion indicates primary hyperaldosteronism.

Post-infusion plasma aldosterone <162 pmol/L makes the diagnosis of primary hyperaldosteronism unlikely. Aldosterone \geq 162 pmol/L Consistent with primary hyperaldosteronism, further investigation warranted.

References

¹ Comparison of seated with recumbent saline suppression testing for the diagnosis of primary aldosteronism. Stowasser M et al. JCEM 2018; 103:4 113-4124

² Case Detection, Diagnosis, and Treatment of Patients with Primary Aldosteronism: An Endocrine Society Clinical Practice Guideline. JCEM 2016

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Approved by:	Anne-Marie Kelly	Page 11 of 47	