Saline Infusion test for Aldosteronism

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Contents

1. Purpose of guideline

To facilitate the safe and effective care of a patient whilst assessing autonomous aldosterone production, i.e. adenoma or hyperplasia within Auckland District Health Board (Auckland DHB).

2. Saline infusion test for aldosteronism

The table below describes the stages in the saline infusion test for aldosteronism process:

Stage	Description
Indication	Raised aldosterone/renin ratio with plasma aldosterone > 400 nmol/L.
Contra-indication	Patients with congestive heart failure or inability to tolerate high volume fluid infusions. Hypokalaemia should be pre-treated.

Preparation	• Patient must be off for four to six weeks:
	  ○ Amiloride or spironolactone, including where in combination with other medicines (e.g. Amizide, Moduretic, Frumil).
	  ○ Check with endocrine consultant regarding possible changes in medication pre-testing.
	• Maintain potassium supplement medication.
	• Patient should bring all medications to appointment.

Equipment	• Intravenous (IV) equipment • Four x 500 ml bags of Normal Saline 0.9% • Blood tubes, clearly labelled • Blood pressure measuring device • Observation chart.
Procedure	1. Check and document regular patient anti-hypertensive medication has been taken: ○ Beta-blockers, diuretics, ACE inhibitors, angiotensin-II receptor antagonists, calcium channel blockers and nonsteroidal anti-inflammatory drug (NSAIDs). 2. Insert IV line, withdraw basal bloods and send sample for an urgent serum potassium level. 3. Patient should remain seated throughout except for toileting 4. Take baseline blood pressure, and hourly thereafter. 5. Commence infusion 500 mL Normal Saline 0.9% per hour for four hours = 2 L total volume. 6. Measure blood pressure hourly 7. During procedure, assess patient's breathing and report acute breathlessness/chest tightness. 8. Obtain 4-hour blood sample at end of infusion. Test now complete. If blood pressure (BP) > 200/120 consider oral diuretic.

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Stage	Description
Samples	• Basal – sodium, potassium, creatinine, Aldosterone. • + 4-hours – Aldosterone only. • Note: aldosterone need to be in to the laboratory within two hours.

Interpretation	• Aldosterone/renin ratio > 40 = consistent with hyperaldosteronism = screening test only.
	• The suppression test for autonomous aldosterone production:
	  ○ Normal subjects - plasma aldosterone < 200 pmol/L.
	  ○ Hyperaldosteronism - plasma aldosterone > 200 pmol/L.
	
	Failure to suppress also occurs in a proportion of patients with hypertension and reduced glomerular filtration rate.

3. Supporting evidence

- Dons, R. F. (1998). *Endocrine and Metabolic Testing Manual: Third Edition*. Boca Raton: CRC-Press, 1-17.
- Holland, O. B., Brown, H. E. L. L. E., Kuhnert, L., Fairchild, C., Risk, M., & Gomez-Sanchez, C. E. (1984). Further evaluation of saline infusion for the diagnosis of primary aldosteronism. *Hypertension*, *6*(5), 717-723.
- Rossi, G. P., Belfiore, A., Bernini, G., Desideri, G., Fabris, B., Ferri, C., ... & Mannelli, M. (2007). Prospective evaluation of the saline infusion test for excluding primary aldosteronism due to aldosterone-producing adenoma. *Journal of hypertension*, *25*(7), 1433-1442.

4. Associated documents

- Hand Hygiene - Infection Prevention
- Infection Prevention and Control
- Informed Consent
- Intravenous Catheters – Peripheral – in Adults and Children
- Medication Administration
- Standard Precautions - Infection Control
- Tikanga Best Practice

5. Disclaimer

No guideline can cover all variations required for specific circumstances. It is the responsibility of the health care practitioners using this Auckland DHB guideline to adapt it for safe use within their own institution, recognise the need for specialist help, and call for it without delay, when an individual patient falls outside of the boundaries of this guideline.

6. Corrections and amendments

The next scheduled review of this document is as per the document classification table (page 1). However, if the reader notices any errors or believes that the document should be reviewed ***before*** the scheduled date, they should contact the owner or Document Control without delay.