FLUDROCORTISONE SUPPRESSION TEST FOR HYPERALDOSTERONISM

INTRODUCTION

Sodium loading should normally suppress aldosterone to well below 140 pmol/L. Patients with hyperaldosteronism are in a state of salt retention and further sodium loading with a sodium retaining steroid will have no effect on plasma aldosterone. Adequate potassium needs to be administered to ensure that aldosterone secretion is not inhibited by hypokalaemia.

Patients should already have been screened with a random aldosterone:renin ratio (see screening protocol for Aldosterone Renin Studies) and an elevated value should have been observed (aldosterone:renin ratio > 1000 and an aldosterone >250 pmol/L).

CONTRAINDICATIONS AND SIDE EFFECTS

The risk of sodium loading prohibits the use of this test in elderly subjects and those with severe hypertension. Hypokalaemia is common during this test.

PATIENT PREPARATION

- Patient needs to be hospitalised for at least 4 days to carry out the test.
- All hypertensive medication should be stopped as per aldosterone screening protocols.

PROTOCOL

Requirements

1. Fludrocortisone 0.1 mg tabs x 16
2. Slow Na (10 mmol) tabs x 36
3. Slow K (8 mmol) tabs - may need up to 200 tablets
4. Two PLASTIC orange top (Li heparin) blood tubes

Procedure

Please alert Biochemistry staff (extension 3032) that this test is being undertaken.

- Day 1: Blood sample for plasma aldosterone should be taken mid-morning. The subject should be upright for at least 30 min prior to venepuncture. Sample must be taken immediately to the laboratory.
- **Fludrocortisone 0.1 mg** is administered 6 hourly for 4 days
- **Slow Na 3 x10 mmol** tabs are administered 8 hourly for 4 days
- Plasma potassium should be measured at least twice daily and **Slow K tabs** administered in sufficient quantity to maintain normal plasma potassium.
- Day 4: Blood sample for plasma aldosterone should be taken mid-morning. The subject should be upright for at least 30 min prior to venepuncture. The sample must be taken immediately to the laboratory.

INTERPRETATION

Serum aldosterone > 140 pmol/L at the end of the study confirms a diagnosis of Primary hyperaldosteronism.

SENSITIVITY AND SPECIFICITY OF TEST

This test is considered to be the definitive diagnostic procedure for hyperaldosteronism. However comparison of this test with an iv saline loading test in a series of 100 subjects suggests that the latter is equally efficient as a diagnostic tool whilst being easier, cheaper and potentially safer (Mulatero et al 2006).

Note: If the patient remains recumbent this may result in false lowering of aldosterone due to two different causes. Firstly, aldosterone shows a similar though less marked diurnal rhythm to cortisol with a fall in concentration as the day progresses although this is overcome by the effect of angiotensin if the patient is ambulant. Secondly, some tumours are responsive to angiotensin, and aldosterone will consequently be lowered by prolonged (eg > 2 hours) recumbence.

REFERENCES

1. Funder JW, et al. 2008. Case detection, diagnosis, and treatment of patients with primary aldosteronism: An Endocrine Society clinical practice guideline. *J Clin Endocrinol Metab*. 93(9): 3266-3281.
2. Mulatero P et al. Confirmatory tests in the diagnosis of primary aldosteronism. *Horm Metab Res.* 2010 Jun;42(6):406-10.
3. Mulatero P et al. Comparison of confirmatory tests for the diagnosis of primary aldosteronism. *J Clin Endocrinol Metab.* 2006 Jul;91(7):2618-23.

CONTACTS

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