Captopril challenge test for hyperaldosteronism

The principle of the test is that normal individuals suppress aldosterone completely after captopril, an ACE inhibitor. In hyperaldosteronism there is a failure to suppress aldosterone.

Indications
This test is a second line test for the diagnosis of primary aldosteronism. It has lower sensitivity than the saline infusion test (SIT) for hyperaldosteronism, however can be considered in patients with uncontrolled severe hypertension where the SIT is contraindicated, following discussion with a consultant endocrinologist.

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

Contraindications
Patients in cardiac or renal failure particularly patients on diuretics.

Requirements
- 2 pink top EDTA for plasma renin and aldosterone
- 25-50 mg captopril to be given orally

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.
- Patient should be seated for 1 hr before test

Procedure
- Patient should be seated throughout test.
- Perform blood pressure monitoring at 0, 60 and 120mins during test

Minutes	Procedure	Sample
0	Take sample for **Aldosterone and renin** 25-50mg captopril to be given orally	1 x pink top EDTA tube (Aldosterone and renin)
120	Take sample for **Aldosterone and renin**	1 x pink top EDTA tube (Aldosterone and renin)

Interpretation of results[1]

Suppression of aldosterone >30% at 120mins from baseline normal response to captopril

In patients with hyperaldosteronism, aldosterone remains elevated and plasma renin suppressed.

Differences in response can be seen in APA (aldosterone producing adenoma) compared to IHA (idiopathic adrenal hyperplasia); in IHA some decrease in aldosterone may be seen as adrenal hyperplasia is angiotensin II responsive.

Note a substantial number of false positives and equivocal results have been reported with this test.

Reference[1]: Case Detection, Diagnosis, and Treatment of Patients with Primary Aldosteronism: An Endocrine Society Clinical Practice Guideline. JCEM 2016