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# ALDOSTERONE-RENIN RATIO

**INDICATION:** Screening test for suspected primary hyperaldosteronism (Conn's syndrome).

**PRECAUTIONS:** Several antihypertensive medications interfere with aldosterone and plasma renin activity and will need to be discontinued prior to testing as per the table given below:

| Drug | Physiological effect | Time required to remove interference |
|---|---|---|
| ACE-I & ARB | Increase PRA & reduce aldosterone | 2 weeks |
| Beta-blockers | Reduce PRA more than aldosterone | 2 weeks |
| Calcium channel blockers | Reduce aldosterone and stimulate renin production | 2 weeks |
| Diuretics | Increase PRA and aldosterone | 2 weeks |
| Hypokalaemia | Inhibits aldosterone secretion | |
| NSAIDs | Retain sodium and reduce PRA. Possible effect on aldosterone | 2 weeks |
| Oestradiol | Increases renin substrate | 6 weeks |
| Spironolactone | Increases PRA, variable effect on aldosterone | 6 weeks |

Ideally all interfering drugs should be stopped, but if this is impractical, a best pragmatic approach is to stop ACE inhibitors, ARB and beta-blockers for 2 weeks and to avoid calcium channel blockers on the day of the test. Doxazosin, Prazosin and Hydralazine can be used for blood pressure control whilst other agents have been discontinued.

Patients should be adequately hydrated and remain on an adequate salt intake (not loading) prior to the test. If hypokalaemia is present this should be corrected prior to testing as it can suppress aldosterone secretion. Potassium should be stopped on the day of the test.

**PROCEDURE:** The test should be done in the morning, the patient being ambulant beforehand but asked to sit quietly for at least 10 minutes prior to blood samples being taken. Samples should be taken for aldosterone (serum container) and plasma renin activity (lithium heparin tubes) which should be sent to the biochemistry laboratory immediately (within one hour) for immediate centrifugation and freezing. Please note no ice is required, as ice will cause cryo-activation (conversion of pro-renin into renin) artificially giving a high apparent renin activity. The sample for U & E should also be taken at the same time (a serum tube).

**INTERPRETATION:** Aldosterone secretion is dependent on sodium intake and balance, state of hydration, posture, serum potassium concentration, drug therapy and a variety of other influences.

Interpretation is often provided on the report from Leeds if adequate clinical information is provided when requesting the test.

Aldosterone/renin ratios:

| | |
|---|---|
| > 2000 | almost certainly aldosterone producing adenoma |
| 800 - 2000 | possibly Conn's, may require further investigation |
| < 800 | Conn's excluded |

If hypokalaemia present then supplement with Sodium 150 mmol per day and Potassium 100 mmol per day for four days and repeat tests.

**Authors: Endocrine MDT meeting, 14 July 2017**