Dexamethasone Suppression Test

Indications

- Diagnosis or exclusion of Cushing’s syndrome. Usually performed following 2x24 hour urinary free cortisol collections and prior to admission for formal diagnosis. 1mg test may occasionally be sufficient in low probability patients, however a full low dose dexamethasone suppression test is usually required. The high dose test is performed in patients with confirmed Cushing’s to help distinguish between adrenal and other causes.
- This test is also performed to aid the differential diagnosis of polycystic ovarian syndrome from autonomous androgen secreting tumours.

Preparation and precautions

- Patients can eat and drink normally and take all their usual medications prior to the test. Estrogen containing medications, including the contraceptive pill and hormone replacement therapy, should be stopped for six weeks prior to measuring serum cortisol. This is because estrogen induces cortisol binding globulin and leads to elevations in measured serum cortisol. Any steroid containing medications should also be documented, and avoided if possible, as they may interfere with the hypothalamo-pituitary-adrenal axis, or cross react with the cortisol assay.
- Care is needed in patients with suspected or active peptic ulcer disease (referring physician may prescribe proton pump inhibitor prior to test). Care is also needed in patients with diabetes mellitus, as blood sugars may rise during test. Referring clinician will advise patient whether they need to increase dose of insulin, or just test blood glucose more frequently during test.
- Potent inducers of the cytochrome P450 system accelerate the clearance of dexamethasone and so invalidate this test. Patients taking rifampicin, phenytoin, phenobarbital and carbamazepine should therefore be discussed with the endocrinologist, before proceeding with the test as interpretation will be difficult.

Procedure: Low dose dexamethasone suppression test

- Day 1, 9am, base line blood test taken into a plain clotted tube for cortisol. In patients with virilisation, the blood will also be tested for other adrenal steroids: testosterone, dehydroepiandrosterone, 17-hydroxyprogesterone and androstenedione as specified by the requesting clinician. The bottle and request form should be labelled “2+0” (2mg total dose over 24hrs, time=0).
- The patient then takes their first dexamethasone tablet at 9am. The patient is given 9 tablets of 0.5mg dexamethasone altogether which includes this first supervised dose, and one spare tablet in case of mishap. The patient then takes the following tablets strictly eight hourly for the next 48 hours: at 3pm, 9pm, 3am and 9am.
- Day 3, 9am, patient returns for the second blood test labelled “2+48,” having taken their last dose of dexamethasone at 3am that morning. In patients admitted to hospital, an extra blood test is taken at 24 hours, at 9am on day 2, prior to their fifth dose of dexamethasone and labelled “2+24.”

Procedure: High dose dexamethasone suppression test

- The procedure for the high dose dexamethasone suppression test is identical to that for the low dose dexamethasone suppression test, except that each dose is 2mg rather than 0.5mg dexamethasone. Samples are labelled “8+0,” “8+24,” and “8+48” for 8mg total daily dose, at times 0, 24 and 48 hours. Since this test requires the patient to take high doses of steroids which may cause more severe side effects, this is usually supervised during a hospital admission.
Procedure: Overnight 1mg test

- 1mg dexamethasone is administered to the patient to be taken at home at 10pm. The patient is then advised to return for a blood test (plain clotted tube only for cortisol) at 9am the following morning. The tube must be clearly labelled as post 1mg dexamethasone.

References

Investigation protocol adapted from:
“Endobible,” Imperial Centre for Endocrinology Press, Meeran K. et al
URL: http://www.endobible.com/investigation/dexamethasone-suppression-test/