Overnight Dexamethasone Suppression Test

Indications
This is one of the first line screening tests for Cushing’s syndrome. Cushing’s syndrome is a collective name for a number of endocrine conditions associated with the overproduction of cortisol by the adrenal gland. Cortisol production is controlled by the secretion of adrenocorticotropic hormone (ACTH) from the pituitary and is under negative feedback control from cortisol. Excess cortisol production can be secondary to an ACTH secreting pituitary tumour (Cushing’s disease, 70% of cases), ectopic secretion of ACTH (12% of cases) or an adrenal adenoma/carcinoma (18% of cases).

Dexamethasone is a synthetic glucocorticoid, more potent than cortisol and can act to suppress ACTH and hence cortisol production in healthy individuals but not in Cushing’s syndrome.

Preparation
The test can be done on an outpatient basis with the patient taking the dexamethasone between 2300 and 2400, presenting for a blood test the following day.

Procedure
1. Patient takes 1mg of Dexamethasone orally between 23:00 and mid-night.

2. The next day at 09:00 collect blood (serum/gold top) for "Post Dexamethasone Cortisol"

Interpretation
Suppression of cortisol to less than 50nmol/L excludes Cushing's syndrome. Sensitivity 95% and specificity 80% (although specificity is increased to 95% if a cut off 140nmol/l is used). If levels are not suppressed please contact the laboratory to discuss further investigation

Confounding factors
1. Morbid obesity can cause false positives.
2. Weight loss: recent weight loss, including anorexia nervosa, may result in a false lack of suppression in 25% of patients
3. Stress & depression: Psychological or physical stress and depression override normal cortisol feedback in 30-50 % of cases giving false results. Findings can mimic Cushing's. It is recommended to avoid testing during intercurrent illness.
4. Alcohol: Chronic alcohol abuse can produce a clinical and biochemical Cushing's syndrome which resolves after as little as one week abstention. Clinical interpretation will need to take account of possible clandestine alcohol consumption.
5. Therapeutic drugs: Drugs which induce hepatic enzymes, e.g. phenytoin, carbamazepine, phenobarbitone and rifampicin, may enhance clearance of dexamethasone resulting in false lack of suppression. Oestrogens, oral contraceptives and tamoxifen increase cortisol binding globulin resulting in a false lack of suppression in up to 50 % of subjects.
References