Low-Dose Dexamethasone Suppression Tests

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- ✧ Purpose: to differentiate patients with Cushing's syndrome of any etiology from patients with normal hypothalamic-pituitary-adrenal function.
- ✧ Only action of dexamethasone : suppress pituitary ACTH

Standard Two-Day Test

1. At least one basal 24-h urine specimen is collected, usually beginning at 8 AM, for 17-OHC, free cortisol, and creatinine assays
2. Immediately after the basal urine collection is completed, the patient begins taking 0.5 mg dexamethasone orally every 6 h for a total of eight doses, and urine collection is continued.
   -- less than about 45 kg (100 lb): modified dose
3. Six hours after the last dose of dexamethasone, the last urine collection is completed and blood can be drawn for assay of cortisol, ACTH, and dexamethasone.

Normal Values.

On second day of administration:

- ➢ Urinary 17-OHCS : should fall to < 6.9 μ mol (2.5 mg)/ 24 hours
- ➢ Urinary free cortisol : should fall to < 55 nmol (20 μ g)/ 24 hours
- ➢ plama cortiol :< 140 nmol/L (5 μ g/dL)
- ➢ plasma ACTH : < 4.4 pmol/L (20 pg/mL)
- ➢ plasma dexamethasone should be from 7.7 to 10 nmol/L (3 to 4 ng/mL)

Overnight Screening Test

1. Dexamethasone (1 mg) is taken orally between 11 PM and midnight, and a single blood sample is drawn at 8 AM the next morning for assay of cortiol and, if one wishes, ACTH and dexamethasone.
   -- A dose of 0.3 mg/m2 surface area can be used in children.
   -- No special precaution are required, untoward side effects are virtually absent, and either test can be conducted on an outpatient basis by an intelligent and compliant patient

Normal values:

- ➢ 8 AM plama cortiol :< 140 nmol/L (5 μ g/dL)
- ➢ plasma ACTH : < 4.4 pmol/L (20 pg/mL)
- ➢ salivary cortisol : 2.1±1.1 nmol/L (0.8±0.4 ng/mL) (range: 1.7 to 3 nmol/L [0.6 to 1.1 ng/mL]
- ➢ plasma dexamethasone should be from 2.6 to 7.7 nmol/L (1 to 3 ng/mL)

Interpretation:

- ✧ quick and reliable screening test for Cushing's syndrome (12 to 15% false-positive results)
- ✧ If the morning plasma cortisol level is less than 140 nmol/L (5 μ g/dL), the syndrome is essentially excluded.
- ✧ If the 8 AM plasma cortisol level is greater than 275 nmol/L (10 μ g/dL), the patient has a high probabilty of having Cushing's syndrome, and further diagnostic tests should be performed to confirm the diagnosis and determine its etiology.
- ✧ Measuring plasma dexamethaone concentrations is recommended for all dexamethasone suppression tests.