



Screening Tests for Common Endocrine Disorders

SCREENING TESTS FOR COMMON ENDOCRINE DISORDERS

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ADRENAL PROBLEMS

Addisons Disease:

Synacthen test, plasma ACTH, renin, aldosterone, adrenal antibodies.

ACTH Deficiency (as in hypopituitarism):

0800h plasma cortisol, synacthen test (may be normal), metyrapone test.

Adrenal Suppression (patients on steroids):

Synacthen test, withholding morning prednisone dose until test completed. (If response subnormal, hold prednisone dose at 3mg, or hydrocortisone dose at 15mg, until synacthen test, repeated at approx. 3 monthly intervals, is normal).

Congenital Adrenal Hyperplasia:

Plasma 17-OH progesterone (if indicated, during synacthen test). Plasma ACTH and renin. Usually should be measured in early morning (before 1000h) along with plasma cortisol.

Conn's Syndrome:

Plasma renin and aldosterone, preferably before 1000hr and in absence of beta blockers and ACE inhibitors. Patient must have been standing for at least 30 minutes. Measurement of plasma potassium is helpful in the interpretation of the aldosterone levels.

Cushing's Syndrome:

24hr urine cortisol, 1mg overnight dexamethasone suppression test. Plasma ACTH for differential diagnosis.

Phaeochromocytoma:



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Plasma metanephrines. Urine (in acid) for free catecholamines and metanephrines.

Virilising Disorder

Plasma testosterone, SHBG, DHEA sulphate, 17-hydroxyprogesterone, cortisol (if indicated)

CALCIUM PROBLEMS

Hypocalcaemia:

Plasma parathyroid hormone, 25(OH)-vitamin D, ionised calcium, fasting urine calcium:creatinine ratio.

Hypercalcaemia:

Parathyroid hormone, (if normal, PTH related peptide, 25(OH)-vitamin D).

Paget's disease, increased bone turnover:

ALP (bone specific if liver disease).

GLUCOSE (ISLET CELL) PROBLEMS

Hypoglycaemia:

Plasma insulin (after overnight fast or during hypoglycaemic episode), measure glucose on same sample as insulin. C-peptide measurement will distinguish between endogenous and exogenous sources of insulin. Sulphonylurea assay if raised insulin and C-peptide in presence of hypoglycaemia.

GONADAL PROBLEMS (FEMALE)

Amenorrhoea/Menstrual Disturbance:

LH, FSH, prolactin, oestradiol. If prolactin raised, TSH and free thyroxine index. Tests for hirsutism if indicated.

Menopause:

Raised LH & FSH, low oestradiol may indicate that the patient is perimenopausal. Considerable fluctuations may be seen over many months until the patient is truly menopausal. Patients receiving HRT will usually show a fall in LH and FSH, but symptoms and bone density are probably better parameters to monitor.

Hirsutism:



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Basic screening: plasma testosterone, sex hormone binding globulin.

Additional tests: LH, FSH, adrenal androgens (e.g. DHEAS), 17-OH progesterone. Tests for Cushing's and acromegaly if indicated.

Infertility:

Tests for ovulation

Ovulation profile - multiple urine samples, inquire.

Plasma progesterone, one or more samples between days 21-24 of the cycle. (First day of menstruation = day 1).

For other tests, see Amenorrhoea and Hirsutism.

GONADAL PROBLEMS (MALE)

Gynaecomastia:

Plasma oestradiol, LH, FSH, prolactin, testosterone, sex hormone binding globulin, beta-HCG, alpha-foetoprotein.

Impotence:

Testosterone, sex hormone binding globulin, prolactin, LH, FSH.

HEART PROBLEMS

Heart failure:

BNP (brain natriuretic peptide).

HYPERTENSIVE PROBLEMS

See Conn's syndrome, Phaeochromocytoma and possibly Cushing's Syndrome.

PITUITARY PROBLEMS

Hypopituitarism:

Free thyroxine index, LH, FSH, prolactin, oestradiol, testosterone, plasma cortisol (8am), 24hr urine cortisol, Synacthen test, plasma IGF-1. Additional stress tests may be required (eg hypoglycaemia, metyrapone test to assess ACTH and cortisol status; glucagon, arginine or insulin hypoglycaemic test to assess GH axis).



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Galactorrhoea / Amenorrhoea:

Plasma prolactin. If borderline, repeat half hourly x 3 with indwelling needle, patient resting.

Cushing's disease:

See Cushing's Syndrome.

Acromegaly:

Plasma IGF-1, random plasma growth hormone profile. Consider glucose suppression test but usually IGF-I is a sufficient screen.

Short/tall stature:

Plasma IGF-1, IGFBP-3, TSH and Free T4.

Short stature

Plasma growth hormone during stimulatory tests (clonidine, hypoglycaemia, sleep, exercise).

THYROID PROBLEMS

Hypothyroidism:

Free thyroxine index, TSH. Consider thyroid antibodies.

Hyperthyroidism:

Free thyroxine index, TSH, free T3. If the diagnosis is confirmed, thyroid scan is recommended. (Nuclear Medicine Dept, Christchurch Hospital).

NOTE

Some hormones, e.g. ACTH, aldosterone, catecholamines and PTHrP require special collection conditions. The nurses in the Endocrine Test Centre, Ward 26, Second Floor, Riverside Block, Christchurch Hospital will ensure that special test procedures and sampling are carried out correctly.