DEXAMETHASONE SUPPRESSION TEST- TWO DAY HIGH DOSE

INTRODUCTION

A high dose of dexamethasone given over a short period of time differentiates ACTH dependent Cushing's of pituitary origin (Cushing's disease) from that of an ectopic origin by causing suppression of plasma ACTH and serum cortisol in the former.

CONTRAINDICATIONS AND SIDE EFFECTS

Adverse clinical effects may occur in patients with incipient heart failure, diabetes, hypertension and peptic ulcer; perform with caution in these patients, or avoid, particularly in those with heart failure. Exercise care in patients with severe depression or hypomania.

Patients on enzyme inducing drugs e.g. anti-convulsants may rapidly metabolise dexamethasone. Oestrogen therapy may induce cortisol binding protein and artefactually increase total cortisol levels.

PATIENT PREPARATION

Stop all oral oestrogen therapy 6 weeks prior to test. There should have been no treatment with glucocorticoids, including topical preparations, for several weeks. Mineralocorticoids do not interfere with this test. Diabetic patients should have had good glycaemic control for at least 3 weeks prior to the test. Glucose levels should be monitored 3-4 times daily over the period of the test and adjustments made to their diabetes medications as appropriate.

PROTOCOL

The test should commence on the morning of day 1 and end on the morning of day 3. Please alert Biochemistry staff (extension 4991) beforehand to the arrival of samples for ACTH.

1. Plasma ACTH and cortisol samples are taken immediately before starting the test. The EDTA sample (pink topped tube) for ACTH must be transported quickly to the laboratory.
2. Dexamethasone 2mg tablet is given orally every 6 hours over a period of 48 hours (total 16mg).

Dexamethasone oral dose:

- 2mg every 6 hours for a period of 48 hours

3. Plasma ACTH and cortisol samples are taken as above, 6 hours after the last dose of dexamethasone.
4. The samples for ACTH will not be analysed unless there is ambiguity in the cortisol response to the test.

INTERPRETATION

Normal response: marked suppression of serum cortisol to <50% of the baseline 6 hours after the last dose of dexamethasone.

Suppression of serum cortisol to <50% of the baseline in patients with established Cushing's syndrome, points to a pituitary-dependent aetiology.

Failure of suppression is a feature of ectopic ACTH-producing tumours and also occurs in cases of adrenocortical tumours (adenoma and carcinoma); with the advent of sensitive ACTH assays however this test is not required to differentiate these two conditions.

Suppression of a high base-line plasma ACTH following this test occurs in patients with pituitary dependent Cushing's disease, but adds nothing to the information gained from confirming cortisol suppression alone.

SENSITIVITY AND SPECIFICITY OF TEST

The high dose dexamethasone test is useful but not totally reliable in the differential diagnosis of Cushing's syndrome as it is neither very sensitive nor specific. Suppression occurs in 75% of patients with Cushing's disease, 10-25% of patients with ectopic ACTH and 0-6% of patients with adrenal tumours. Patients with ectopic ACTH who show suppression tend to have occult and relatively benign tumours with lower levels of ACTH and cortisol. These patients are very hard to differentiate from Cushing's disease.

The 0900h cortisol after 48 hours is considered to be the best parameter to discriminate between Cushing's disease and ectopic ACTH. However, the criterion of 50% suppression at 48 hours should not be applied too rigidly as many cases of Cushing's disease will suppress by 40 or 45% or suppress after 72 hours. In difficult cases it is advisable to repeat the test as no patients with an adrenal tumour have been shown to have reproducible suppression and cases of Cushing's syndrome may show cyclical variation.

PLEASE NOTE

The cortisol suppression in response to this test is also seen in alcohol-induced Cushing’s syndrome.