

Hydrocortisone Day Curve Test - Full Clinical Guideline

Reference No: CHISCP33

1. Introduction

Hydrocortisone is a glucocorticoid used for steroid hormone replacement in primary and secondary adrenal insufficiency. The hydrocortisone day curve involves serial cortisol measurements throughout the day, which are used to determine if a patient has adequate cortisol replacement.

2. Guideline

CONTRAINDICATIONS

Results of this test can be difficult to interpret in patients taking oestrogen-based medication due to the increase in cortisol binding globulin (CBG).

PRECAUTIONS

Omission of the morning hydrocortisone dose can leave patients feeling weak and dizzy. Patients should be advised to carry steroids with them in case they feel unwell.

Patient should be kept under observation throughout the period of this test.

PREPARATION

Planning

Patient should be admitted at 08:30 ready to begin the test. Beginning the test as early as possible minimises the delay during which the patient is without cortisol cover.

The normal times that hydrocortisone medication is taken should be established from speaking to the patient and then times of medication and sampling during the test should be adjusted so that the time interval between the morning and lunchtime dose is the same as a normal day.

Patient

Patient should fast from midnight prior to the test and **omit the morning dose of hydrocortisone.**

Equipment

- 6 SST (yellow top) vacutainers are required for measurement of cortisol levels
- 1 EDTA (purple top) vacutainer for Renin (if patient known to have primary adrenal insufficiency) or for ACTH (if patient known to have secondary adrenal insufficiency)
- i.v cannula
- patient's normal hydrocortisone prescription

PROCEDURE

The hydrocortisone day curve procedure is described in Table 1. Samples should be collected through an i.v cannula and must be clearly labelled with patient name, date and time.

TABLE 1

Time (mins)	Test	Tube type	Notes
Before 1 st steroid dose	Cortisol ACTH* Renin#	SST (yellow top) EDTA (purple top) EDTA (purple top)	*ACTH only necessary if there is uncertainty regarding diagnosis and adherence #Renin only necessary if patient known to have primary adrenal insufficiency or uncertain diagnosis. Send ACTH and/or Renin sample to lab immediately (to process within 15 minutes)
Patient should take their normal morning hydrocortisone dose. The dose and time should be recorded.			
1hr after 1 st dose	Cortisol	SST (yellow top)	
Before 2 nd steroid dose	Cortisol	SST (yellow top)	
Patient should take their normal lunchtime hydrocortisone dose. The dose and time should be recorded.			
1hr after 2 nd dose	Cortisol	SST (yellow top)	
Before 3 rd steroid dose	Cortisol	SST (yellow top)	
Patient should take their normal teatime hydrocortisone dose. The dose and time should be recorded.			
1hr after 3 rd dose	Cortisol	SST (yellow top)	

Patient should be discharged ensuring that they have:

- Steroid card
- Steroid information sheet
- Medic alert information
- Access to emergency pack of 100 mg hydrocortisone for injection

Send all cortisol samples with a completed request form to the Pathology Department on the day of the test. Please state 'Hydrocortisone Day Curve' in clinical details.

INTERPRETATION

The aim is to have adequate circulating levels of cortisol throughout the day (except the basal sample which is typically <50 nmol/L). Excessive peaks after each hydrocortisone dose should also be avoided.

Trough (pre-dose) cortisol concentrations should be >100 nmol/L

Peak (post dose) cortisol concentrations should be <800 nmol/L

Suitable for printing to guide individual patient management but not for storage Review Due: Mar 2027

ASSAYING LABORATORY

Pathology at the Royal Derby Hospital

TURNAROUND TIME

Results will normally be available within 2 working days following completion of the test.

3. Documentation Controls

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