

## SHORT SYNACTHEN TEST – PAEDIATRIC PROTOCOL

### INTRODUCTION

This Short Synacthen test involves the administration of Tetracosactrin (Synacthen, Cortrosyn), a synthetic preparation comprising the first 24 amino acids of ACTH, to assess adrenal cortical reserve. Indications for use are in the assessment of suspected adrenal insufficiency or in suspected congenital adrenal hyperplasia (CAH).

### CONTRAINDICATIONS AND SIDE EFFECTS

Contraindicated in patients with allergic disorders e.g. egg allergy.

### PATIENT PREPARATION

The child does not need to fast. The test is best performed early in the morning. The patient is placed in a reclining position to rest for 30 minutes prior to the test.

#### Concurrent medication

Pharmacological doses of glucocorticoids should not have been administered for the previous 12 hours.

### PRECAUTIONS AND PATIENT CARE DURING TEST

#### Preparation for the treatment of anaphylactic reaction should be made in advance

1. The patient should rest on the bed for the duration of the test.
2. Tetracosactrin can cause an allergic reaction within approximately half an hour of the injection; the patient should therefore be kept under observation during this time.
3. If there is a local or systemic reaction e.g. marked redness and pain at the injection site, urticaria, pruritis, flushing, faintness or dyspnoea, treat for anaphylactic shock.

#### Emergency Treatment for Anaphylactic Reaction

1. Adrenaline 0.4 to 1mL of a 0.1% solution IM or 0.1 to 0.2mL of a 1% solution in 10mL of physiological saline slowly by IV.
2. Hydrocortisone 100-500mg IV three to four times in 24 hours, repeat if necessary.

### PROTOCOL

Please use separate pro-forma to record samples taken and timing.

1. Cannulate the child and wait 30 minutes before taking baseline (time 0) samples.
2. Take baseline (time 0) blood samples into 1 x orange lithium heparin tube for cortisol and 17-hydroxyprogesterone and 1 x red EDTA tube for ACTH.
3. Administer the Tetracosactrin 36mcg/kg (IM or IV) or according to the dosage chart below:

#### Tetracosactrin (Synacthen) Dosage (I.M.)

Infants under 6 months	62.5 mcg
Children over 6 months and under 2 years	125 mcg
Children over 2 years	250 mcg

4. Take second set (time 30 minutes) of blood samples into 1 x orange lithium heparin tube for cortisol and 17-hydroxyprogesterone.
5. Take final set (time 60 minutes) of blood samples into 1 x orange lithium heparin tube for cortisol and 17-hydroxyprogesterone.

## **INTERPRETATION**

### **Interpretation in adrenal function**

A normal cortisol response would be a rise of 200 nmol/L from baseline, or a peak >450 nmol/L. Equivocal results are sometimes obtained in the neonatal period. Low normal levels or partial responses are compatible with some degree of adrenocortical impairment and are an indication for further investigation e.g. a prolonged 5 hour Tetracosactrin stimulation test. A clearly normal response excludes primary and secondary adrenocortical insufficiency and indicates that further tests are not required.

### **Interpretation in 21-hydroxylase deficiency**

With a block in cortisol synthesis, 17-hydroxyprogesterone levels will rise after Tetracosactrin is administered, but there will be little increase in cortisol. In suspected CAH, a peak 17-hydroxyprogesterone of 100 to 200 nmol/L is suggestive of 21-hydroxylase deficiency (higher reference range for preterm infants).

## **CONTACTS**

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## **REFERENCES**

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