

RPA Newborn Care Drug Database

Short Synacthen Test

Indications:	To assess the response of the adrenal cortex to stimulation in suspected adrenocortical insufficiency (primary or secondary or tertiary) or in the diagnosis of congenital adrenal hyperplasia.
Rationale:	ACTH is the primary regulator of glucocorticoid production, and also plays some role in adrenal androgen production. Tetracosactrin (Synacthen), a synthetic form of ACTH, is used to assess the stimulated cortisol response of the adrenal cortex and is valuable in diagnosing primary adrenal insufficiency. The test is also useful in suspected secondary or tertiary adrenal insufficiency since chronic CRH/ACTH deficiency or dysregulation results in temporary quiescence of the adrenal cortex and inability to respond acutely. The test is not reliable in assessing secondary or tertiary insufficiency within 2 weeks of surgery to the hypothalamic-pituitary region or a major alteration in any glucocorticoid therapy. In congenital adrenal hyperplasia, the Synacthen test is useful in diagnosing milder or rare enzyme blocks by examining ratios of various adrenal steroids to their precursor compounds. The commonest ratio examined is that of 17-hydroxyprogesterone/cortisol in suspected non-classical or simple virilising CAH or the heterozygote state.
Contraindications:	Known hypersensitivity to ACTH. Pregnancy. Other listed contraindications apply to ongoing treatment with Syacthin only.
Formulation:	Tetracosactrin (Synacthin, Ciba-Geigy) 250micrograms in 1 ml. A synthetic polypeptide consisting of the first 24 amino acids of the ACTH molecule.
Dose:	Standard dose Synacthen test: Over 1 year: Single IM or IV injection of 250 micrograms over 2 minutes. Under 1 year: Single IM or IV injection of 125 micrograms over 2 minutes. Alternatively a dose of 250 micrograms/m ² BSA may be used These are all supramaximal stimulus doses Manufacturer recommends IM use only, but has been widely used IV also.
Adverse Reactions:	Hypersensitivity or anaphylactic reaction - rare, but full resuscitation facilities and drugs must be available.
Preparation:	Nil Any time of day, preferably morning

Paula Beale
17/2/12

Equipment: Worksheet
 IV cannula
 Syringes 2ml and 5ml
 Normal saline for cannula flushes
 Tubes - Li heparin (collection) and plain (plasma storage) - labelled with MRN, name, date, time and "Synacthen stim"

Method:

1. Medical officer to order dose and indicate clearly on request form which adrenal steroids to be measured
2. IV cannula inserted
3. Synacthen administered IM by nursing staff, or IV by medical staff
4. Blood sampling as below

Sample	Tube blood volume	0 min	30 min	60 min
Cortisol	Li hep 0.5ml	S	S	S
ACTH	EDTA 1ml	S		
17-OH-progesterone	Li hep 0.5ml	S*	S*	S*
Other adrenal steroids	See reference list	S*	S*	S*

S = sample at this point

* if requested for disorders of virilising disorders

Interpretation:

The following are normal responses:
 Serum cortisol rise of > 280 nmol/l with maximal level > 600 nmol/l
 Normal ratio of 17-OHP to cortisol at 30 mins < 0.023.
 Ratios up to 0.08 suggest heterozygosity for 21-hydroxylase deficiency and ratios > 0.1 suggest CAH (21-hydroxylase deficiency)
 Detailed references are available for other ratios.

Source: The Institute of Endocrinology and Diabetes, Children's Hospital at Westmead.

Philip Bule
 12/2/11 ✓