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| Paediatric Guideline: Short Synacthen® Test for Children and Young People with Asthma on  High Dose Corticosteroids. | | | |
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1. Purpose

To ensure that all children and young people on high doses of corticosteroids who are at risk of adrenal insufficiency are identified and have their adrenal function checked via a short Synacthen® test.

1. Scope

To be used primarily by the paediatric asthma team at RHCYP and SJH who manage children and young people with asthma who are taking high doses of steroids.

1. Definitions

Glucocorticoids are steroid hormones produced by the adrenal cortex that have an essential role in supporting both resting and stress-related homeostasis. This is controlled through a negative feedback loop via the hypothalamic-pituitary-adrenal (HPA) axis. Long-term exogenous glucocorticoid use, such as high dose inhaled, oral or intramuscular steroids used in chronic asthma management, may influence this axis and suppress the body’s own endogenous glucocorticoid production. This is termed ‘adrenal insufficiency’ and can have life-threatening effects during acute illness or injury if additional exogenous glucocorticoid therapy is not given, as the body is unable to mount a stress response and produce the additional glucocorticoid required.

A short Synacthen® test is a dynamic function test used in the diagnosis of adrenal insufficiency. The synthetic polypeptide Synacthen® (tetracosactrin acetate) is structurally similar to Adrenocorticotrophic Hormone (ACTH). It has a short duration of action and permits a rapid and convenient screening test for the assessment of adrenocortical function.

1. Roles and responsibilities

All clinicians within the paediatric asthma team are responsible for identifying children and young people on high doses of steroids who may be at risk of adrenal insufficiency. These patients should have a short Synacthen® test arranged via the Asthma Nurse Specialists. The results of this test should be reviewed by the Asthma Nurse Specialists and acted upon accordingly (see separate guideline: ‘Management of children and young people with asthma with proven or suspected adrenal insufficiency’). A discussion with the paediatric endocrinology team may be required.

1. Main content

5.1. Identification of children and young people at risk of adrenal insufficiency

The following children and young people with asthma are at risk of developing adrenal insufficiency and will require a short Synacthen® test carried out to assess their adrenal function:

* Those on high dose inhaled steroid doses: ≥ 800 micrograms beclometasone / budesonide or ≥ 500 micrograms fluticasone per day for ≥6 months
* Those on maintenance oral prednisolone
* Those who have received intramuscular triamcinolone for three or more consecutive months\*
* Those who have had repeated rescue courses of oral steroids (more than six courses in one year)
* Those who have a high burden of steroids via multiple different routes i.e. inhaled, nasal and topical.

\*Short Synacthen® test should be carried out four weeks after last treatment.

5.2. Referral process and preparation

Children and young people who meet the above criteria should be referred to Dirleton ward (RHCYP) or Children’s ward (SJH) for a short Synacthen® test. All referrals should be made via the Asthma Nurse Specialists.

An appointment letter is sent to the family by the clerkess for the relevant ward along with an information leaflet explaining the test, with contact details of the Asthma Nurse Specialists should they require any further information.

If the child/young person is on maintenance oral steroids they should be instructed to omit the dose on the morning of the test.

5.3. The short Synacthen® test

The patient does not need to fast prior to the test.

1. Ensure that prednisolone has been withheld for twenty-four hours (minimum twelve hours) prior to the test, as prednisolone interferes with the measurement of cortisol.

2. Insert an intravenous cannula at least thirty minutes before taking the baseline sample.

3. Collect blood for basal plasma cortisol (0.5 mls LiHep).

4. Give Synacthen® 250 micrograms (250 micrograms/mL) by intravenous injection.

5. Collect further blood samples for cortisol at thirty and sixty minutes following injection of Synacthen®. Ensure that samples are labelled with the time of collection.

6. Any current steroid therapy (including all inhaled, topical, nasal and oral therapy) should be clearly noted on the test request form.

5.4. Interpretation of results

The peak cortisol response usually occurs at sixty minutes. An adequate peak cortisol response is > 430 nmol/L for children and young people of all ages.

If the peak is less than this, please refer to separate guideline: ‘Management of children and young people with asthma with proven or suspected adrenal insufficiency, including during intercurrent illness’.

5.5. Action following results

Results are normally available within one day. The Asthma Nurse Specialists will contact the parents of the child/young person via letter if the result is normal.

If the result is abnormal, the Asthma Nurse Specialists will arrange to see the child/young person and their family within a week to provide a management plan for intercurrent illness.

A letter should be sent to the patient’s GP informing them of the results of the test.

The short Synacthen® test should be repeated annually if the child/young person continues to take steroids as per criteria above.

1. Associated materials

N/A.

1. Evidence base

British Thoracic Society and Scottish Intercollegiate Guidelines Network, (2014).

*British Guideline on the Management of Asthma*.

Drake AJ et al. Symptomatic adrenal insufficiency presenting with hypoglycaemia in asthmatic children with asthma receiving high dose inhaled fluticasone propionate. *BMJ*. 2002; 324(7345): 1083-91.

Paton J et al. Adrenal responses to low dose synthetic ACTH (Synacthen) in children receiving high dose inhaled Fluticasone. *Arch Dis Child* 2006; 91: 808-13.

NHS Lothian Biochemistry Lab Handbook

http://intranet.lothian.scot.nhs.uk/NHSLothian/Healthcare/A-Z/Laboratories/LabHandbooks/Pages/LaboratoryHandbooks.aspx.

1. Stakeholder consultation

N/A.

1. Monitoring and review

This guideline will be updated if any significant new evidence or national guidance is published; otherwise will be due for review in March 2024.