Autoimmune Addison’s Disease in Children

Abstract
The most common cause of severe adrenal insufficiency in children, now known as Addison’s disease, is autoimmune. In this condition the body’s own immune system attacks the adrenal glands and destroys them. People suffering from Addison’s disease are also at increased risk of other organ-specific autoimmune diseases, e.g. of the thyroid gland. If untreated the condition is life threatening and unfortunately it is not always spotted early enough. Though it is now more than 150 years since first described, the disease remains under diagnosed, leading to unnecessary morbidity and mortality. Autoimmune Addison’s disease in children is an uncommon but potentially lethal condition.

We intend to undertake a 13 month study to evaluate a rare condition with important clinical relevance. The current incidence of autoimmune Addison’s disease in UK (under 16 yrs) will be identified. Clinical presentation and diagnostic strategies will be analysed and reported in the scientific literature. Variations in emergency management will be highlighted (for instance provision of emergency injectable treatment, steroid card and ambulance cover).

Principle Investigator
Dr Hima Bindu Avatapalle,
Clinical Research Fellow,
Dept of Paediatric Endocrinology, Manchester Children’s Hospital,
Manchester M13 9WL. Tel: 01617012586 Email: bindu.avatapalle@cmft.nhs.uk

Co-investigators
Dr Jerry Wales, DM, MA, BM BCh, MRCP, FRCPCH, DCH,
Office: C17, Department of Paediatric Endocrinology,
Sheffield Children’s Hospital
Sheffield S10 2TH. Tel: 0114 2717508 Fax:0114 275 5364 Email: j.k.wales@sheffield.ac.uk

Website
http://www.rcpch.ac.uk/what-we-do/bpsu/current-studies/current-studies

Background
Addison’s disease is a rare, life threatening chronic condition which unfortunately is not always spotted very quickly. The incidence of this condition in children is unknown. Further knowledge about the incidence, clinical presentation, diagnostic strategies and variations in emergency management would increase awareness of this condition and help us mitigate the morbidity and mortality in children with this condition.

Coverage
United Kingdom and Republic of Ireland

Duration
July 2011 - July 2012 (13 months)

Research Questions
We intend to undertake a 13 month study to identify the following aspects of autoimmune Addison’s disease in the paediatric population in the UK

1) How common is Addison’s disease in children in the UK and Ireland under the age of 16 years? This would help us define the incidence of this condition in the UK and Ireland

2) What are the clinical patterns of presentation, particularly the interval between the onset of symptoms and diagnosis and associated endocrine and non-endocrine conditions?

Answering these two questions would help us understand the clinical burden of this disease in UK, and the level of awareness of this condition amongst health professionals.

3) What are the variations in the emergency management of children with autoimmune Addison’s disease (for instance provision of emergency treatment, steroid card, ambulance cover)?

This question will inform us about various aspects of emergency management of Addisonian crisis.
**Case definition**

Any child from birth up to but not including 16 years of age with newly presenting suspected or proven auto immune Addison’s disease should be reported on the BPSU orange card. The diagnosis of autoimmune Addison’s disease can be made following clinical presentation of adrenal insufficiency or Addisionian crisis.

**Analytic Case definition:**
A child will be considered to have a diagnosis of autoimmune Addison’s disease if the following criteria are met:

- Presence of adrenal cortical antibodies at diagnosis or confirmed subsequently
- One or more of the following signs and symptoms
  - Hyperpigmentation
  - Poor growth in weight and height
  - Electrolyte abnormalities (Hyperkalaemia, hyponaetremia, hypoglycaemia)
  - Addisionian crisis
- Low cortisol levels with high ACTH levels

"Addisionian crisis" or "adrenal crisis" indicates severe adrenal insufficiency.

Characteristic symptoms are:

- Severe vomiting and diarrhea, resulting in dehydration
- Low blood pressure
- Syncope (loss of consciousness)
- Hypoglycemia, severe hyponatremia and hyperkalaemia
- Confusion, psychosis, slurred speech, convulsions

Exclusion Criteria: children on steroid medication for other causes.

**Reporting instructions**

Please report any child seen for the first time in the UK or the Republic of Ireland during the study period who satisfies the case definition regardless of country of birth.

If the diagnosis is awaiting confirmation, (adrenal cortical antibodies not done or awaited), the child should still be reported.

**Methods**

Paediatricians reporting a case of autoimmune Addison’s disease through the orange card system will be sent a questionnaire which explores epidemiological and clinical information about the affected child. They will also be sent a follow up questionnaire one year later which explores the research questions. Postage paid return envelopes will be enclosed with questionnaires.

**Ethics approval**

This study has been approved by West London REC (Ref: 11/LO/0581) and has been granted Section 251 NIGB permission under reference: ECC 6-02 (FT4/BPSU)/2011

**Funding**

Sir Peter Tizard Bursary

**References**

1. Primary Adrenal Insufficiency in Children: Twenty Years Experience at the Sainte-Justine Hospital, Montreal  The Journal of Clinical Endocrinology & Metabolism Vol. 90, No. 6, 3243-3250

2. Addison’s Disease 2001 Svetlana Ten, Maria New and Noel Maclaren The Journal of Clinical Endocrinology & Metabolism Vol. 86, No. 7, 2909-2922

3. Etiological Diagnosis of Primary Adrenal Insufficiency Using an Original Flowchart of Immune and Biochemical Markers. Stefano Laureti, Patrick Aubourg, Filippo Calcinaro, Francis Rocchiccioli, Giovanni Casucci, Gabriella Angeletti, Paolo Brunetti, Åke Lernmark, Fausto Santeusanio and Alberto Falorni The Journal of Clinical Endocrinology & Metabolism Vol. 83, No. 9, 3163-3168