BPSU

24th Annual Report 2009-2010

British Paediatric Surveillance Unit
Royal College of Paediatrics and Child Health

Supported by the Department of Health

DH Department of Health

Aims of the British Paediatric Surveillance Unit

To:

- Facilitate research into uncommon childhood infections and disorders for the advancement of knowledge and to effect practical improvement in prevention, treatment and service planning
- Allow paediatricians to participate in surveillance of uncommon disorders and to lessen the burden on reporting doctors of such requests arising from numerous different sources
- Increase awareness within the medical profession of the less common disorders studied and respond rapidly to public health emergencies.

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British Paediatric Surveillance Unit

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Royal College of Paediatrics and Child Health
Science and Research Department

British Paediatric Surveillance Unit Annual Report 2009/10

Contents

Foreword

Prof Alan Edmond
Chair, BPSU Executive Committee

I took over as the chair of the BPSU in September 2009, and inherited a mature organization in good health, but facing significant challenges in the difficult economic times ahead. My grateful thanks go to Allan Colver for his leadership of the BPSU over the previous 4 years, in leaving a functional executive and a well organised administration, and in particular the success in securing funding until 2012. The collaboration between the major stakeholders behind the BPSU- the Royal College of Paediatrics and Child Health, the Health Protection Agency and the Institute of Child Health, London remains strong and will be needed in the uncertain future.

The methodology of the BPSU continues to work efficiently, and is copied by many other surveillance bodies, but the Unit will need to evolve with changing times and developing technology. The return rates for the orange reporting cards sent each month to paediatricians remain impressively high (averaging over 90% with one reminder), and there would have to be a good reason for changing a system which is working so well… but we are moving increasingly into an electronic age, and many other surveillance units around the world are using email for initial reporting. The BPSU are using email for chasing up those who don't return their cards, and a recent audit showed that about half of these non – respondents do reply to an email. I am in favour of evolutionary change, based on evidence, so this is an area we will look at further. The other technological advance which could benefit BPSU studies is on-line reporting of cases: this has considerable potential but the same standards of data protection and confidentiality need to be applied as for paper records. We propose to work up a series of standards, with supportive 'how to do it' documentation to assist researchers who are considering online reporting.

One of the achievements of 2009 was developing a 'fast track' response, to get a study from initial outline onto the reporting card within a couple of months. The urgency was the impending H1N1 epidemic, and the need to set up enhanced surveillance of a rare vaccine-related complication – Guillain-Barré syndrome. Congratulations to Dr Chris Verity and colleagues form Cambridge who managed to get the necessary approvals and paperwork completed over the summer holiday period, to include the condition on the BPSU reporting cards from September. The lessons learnt from this experience have now led to improved documentation and a clearer process to fast-track studies in the future. The BPSU is uniquely place to respond to urgent child public health priorities, with coverage across the whole of the UK and Republic of Ireland, and the next time should be even quicker!

The number of potential studies being offered to the BPSU remains encouraging, and the orange reporting card is almost full for the rest of 2010. I would like to acknowledge and thank both Rachel Knowles and Colin Campbell, the BPSU medical advisors, for their hard work, high quality critical appraisal and scientific advice, and their friendly approach to potential researchers. Heartfelt thanks are also due to the admin team who keep the Unit running efficiently- Helen Friend, and Richard Lynn (who celebrated 20 years with the BPSU this year). My colleagues on the executive committee give their time and expertise freely, and have made me very welcome as new chair- thank you all. Output from completed BPSU studies sometimes takes a while to come out, but several studies were presented at the RCPCH meeting in April 2010 and will be included in the INOPSU meeting in Dublin in October.

The BPSU was founded in 1986, so 2011 will mark the 25th anniversary of the Unit, which will be celebrated in a variety of different conferences and events. The vision of co-ordinated national surveillance of rare paediatric conditions remains just as valid and useful today as 25 years ago, and if the BPSU can evolve to embrace appropriate new technology, to broaden the types of conditions included in surveillance and to further enhance user involvement, then we can face a difficult funding milieu with confidence.

Alan Emond
June 2010

Introduction

Rare diseases and infections are, paradoxically, a numerically important cause of morbidity and mortality in childhood. Individually uncommon, together they number thousands, and many result in severe sequelae. Many are characterised by chronicity, high rates of disability or death. These conditions pose a large financial and emotional burden for affected children, their families and health systems.

To address this problem in the UK and Ireland, in July 1986 the British Paediatric Surveillance Unit (BPSU) was set up, enabling paediatricians to participate in the surveillance and further study of rare disorders affecting children.

The BPSU's work primarily concerns epidemiological surveillance, defined as 'the collection, analysis and dissemination of high quality data relevant to the understanding, prevention and control of medical conditions of public health importance so as to satisfy the needs of health care professionals, science, government, voluntary organisations and the public at large'. (Adapted from: Bulletin of the World Health Organisation, 1994; 72).

Several agencies founded and continue collaborating to support the work of the BPSU: the Royal College of Paediatrics and Child Health (RCPCH), the Health Protection Agency (HPA), the University College London - Institute of Child Health Centre for Epidemiology and Biostatistics, Health Protection Scotland (HPS) and the Faculty of Paediatrics of the Royal College of Physicians of Ireland. As the BPSU monitors conditions of public health importance, an observer from the Department of Health attends the BPSU's Executive Committee, which meets every ten weeks to consider individual applications and the progress of studies.

The aims and key challenges of the Unit are summarised on the inside front cover.

This report mainly focuses on activities undertaken during the year 2009.

2 How the Surveillance System Works

Selection of studies for inclusion in the scheme

A study is eligible for participation in the scheme if the subject is a rare childhood disorder (or rare complication of a commoner disease) of such low incidence as to require cases to be ascertained nationally in order to generate sufficient numbers for study.

The number of conditions under surveillance is usually limited to 12. The BPSU application procedure consists of two phases: a screening phase based on an outline of the study and a detailed consideration of the full application. Details about the BPSU application procedure can be downloaded from the website (http://www.bpsu.inopsu.com) or are available on request from the BPSU office.

Factors that increase the likelihood of a study being accepted include scientific importance, clear objectives, a workable case definition and proposals with outcomes of clear importance to public health. Once approved by the BPSU Executive, studies require approval from the Research Ethics Committee (REC) and Ethics and Confidentiality Committee of the National Information Governance Board before commencement.

The reporting system

Those participating in the reporting system include consultant paediatricians who are either members of the RCPCH or the Faculty of Paediatrics of the Royal College of Physicians of Ireland.

Surveillance is 'active' in that the BPSU office actively sends out cards to clinicians asking for cases to be reported on the BPSU orange card (Figure 1). Each month, all clinicians participating in the surveillance scheme are sent the orange card listing the conditions currently under surveillance; follow-up reminders are sent to those who have not returned their card after 2 months. A set of instructions for completing the card, including case definition of the conditions listed on the card is also circulated. When a new study begins, the mailing also includes a specially produced study protocol card and other information about the study.

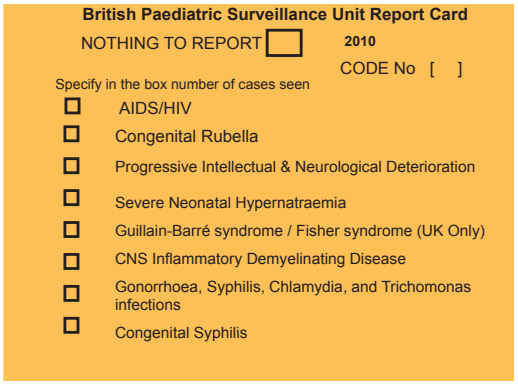

Figure 1: Orange Card Side A

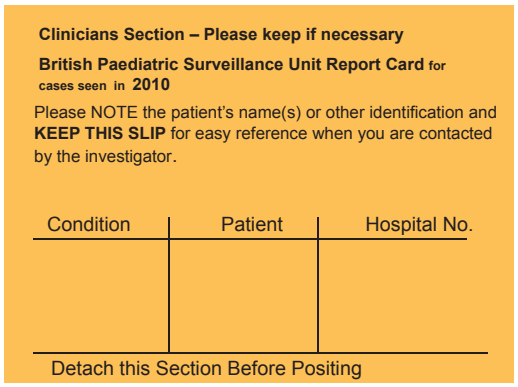

Figure 2: Orange Card Side B

When reporting a case, respondents are also asked to make a note of the case (Figure 2) and keep the details for future reference as they will later be contacted by the study team with a questionnaire about each case.

Participants are also expected to return cards even if they have no cases to report - there is a 'nothing to report' box on the card for them to tick. This is an important feature of the surveillance scheme as it allows us to measure compliance to the reporting system. The compliance rates are thus continually monitored ensuring good coverage of the paediatric surveillance scheme across the whole of the UK and Ireland.

Follow-up and confirmation of case reports

On receiving a case report the BPSU informs the relevant study team. To gather further information the study team sends a short questionnaire to the reporting clinician. Particular care is taken to ensure that questionnaires are as short as possible, clear, straightforward and not excessive

in their demands. As the questionnaire cannot be fully anonymised, the amount of patient identifiable data collected is strictly limited to preserve patient confidentiality. The study investigators report back to the BPSU, indicating when cases have been confirmed or are duplicate case reports (Figure 3). Duplication of reporting is most likely to occur when the condition requires referral to another clinician, but this is encouraged, as it is better to receive duplicate reports than to miss a case.

Figure 3: Surveillance mechanism

Table 2 (page 8) shows the number of cases reported to the BPSU from its inception until the end of 2009 for conditions under surveillance at December 2009. The extent to which investigators receive survey data, identifying incorrect reports and duplicates and the speed in which this is done is known as the 'completion rate'. The number of cases which have so far been subsequently confirmed as meeting the case definition are also shown.

The time taken to follow-up a case report varies greatly between conditions and may be longer if microbiological or pathological details are required to confirm a case. The completion rate is high. For example, as of May 2010, only 955 (8%) of the 12355 case reports had yet to be followed-up. The final completion rate normally averages between 90-95% for a study undertaken through the BPSU.

Table 3 (page 9) summarises the outcome of the follow-up of all cases reported to the BPSU by the end of year 2009 and provides evidence for the level of accuracy of reporting by participating clinicians.

To improve case ascertainment for specific studies where a child may see specialist clinicians, consultants working in a number of other specialties have been invited to participate in the scheme. Pathologists have been included in the BPSU reporting scheme since 1992 and most studies of paediatric infections involve laboratory reporting by microbiologists. Currently, paediatrics surgeons (intussusception) and burns specialists (toxic shock syndrome) are included in the reporting system. Apart from helping to improve ascertainment such complementary data sources help to validate the surveillance system.

Funding

The BPSU continues to be in receipt of a grant from the Department of Health to cover the majority of the running costs of the unit. In addition, the BPSU asks surveillance teams to contribute a sum to cover specific administrative costs. These funds also permit us to undertake additional activities such as holding workshops to support current and potential investigators and conferences. The BPSU is also grateful for the ongoing support that it receives from the Royal College of Paediatrics and Child Health, the Institute of Child Health (London) and the Health Protection Agency.

Sir Peter Tizard Bursary

The bursary, named after one of the founders of the BPSU, is offered as a competitive award. With a value of upto £15,000 it offers, each year, the opportunity for a junior doctor or newly appointed consultants to use the facilities to undertake their own surveillance study and to learn more about disease epidemiology. To date seven awards have been made. Details of the bursary are available on the BPSU website at www.bpsu.inopsu.com.

3 Scientific Coodinator's Yearly Review of Activities

This past year has seen the commencement of three new BPSU studies. The first, severe hypernatraemia, (investigator Dr Sam Oddie - Bradford) commenced in May 2009; two others CNS demyelination (investigator Dr Michael Absoud - Birmingham) and Guillain-Barré syndrome/Fisher syndrome (investigator Dr Chris Verity - Cambridge) commenced in September 2009.

Four studies had their period of surveillance extended for a further year: HIV/AIDS, congenital rubella, progressive intellectual and neurological deterioration (PIND) and toxic shock syndrome.

Two studies have commenced so far as of May 2010; congenital syphilis (investigator Dr Ian Simms - HPA) and gonorrhoea, syphilis, chlamydia, and trichomonas infections in children aged 1 to thirteen years presenting to secondary care (investigator Dr Richard Reading – Norfolk and Norwich). Several studies are currently in final preparation and are due to start in the next few months. These include raised blood lead levels in children (investigator Ruth Ruggles – HPA), chylothorax (investigator Dr Peter Davis – Bristol), glutaric aciduria 1 (investigator Dr Beth Cheesbrough – London), bacterial meningitis in babies <90 days of age (investigator - Dr Paul Heath, St Georges London) and end stage renal failure (investigator Dr Karl McKeever – Belfast).

Since its inception in 1986 the BPSU has completed 79 studies (Appendix A). During 2009/10, there were 18 publications and 46 presentations relating to BPSU studies (Appendices B).

The 2009/10 Sir Peter Tizard bursary was awarded to Dr Hima Bindu Avatapalle for a study on Autoimmune Addison's disease in children.

The BPSU continues to disseminate information on its activities to clinicians and the public alike. This is achieved mainly through this report, the BPSU bulletin and BPSU website

As liaison officer to the International Network of Paediatric Surveillance Units (INoPSU) it is my job to keep the units in contact, inform them of each other's work and put investigators in different countries in touch with each other in order to facilitate collaboration. To assist in this process we are developing a database of all the studies undertaken by each unit, publications and research contacts.

(Photo by Joe Spinoza, aged 12)

Richard Lynn
Scientific coordinator

To date we have over 200 conditions logged. INoPSU will be holding its bi-annual conference in Dublin in October 2010 to continue the exchange of information. The BPSU office continues to manage the INoPSU website (http://www.inopsu.com) where information on INoPSU's work is available and produce the INoPSU e-newsletter.

Participation in the scheme during the year 2009

Two hundred and ninety five consultants were placed on the mailing list during 2009, whilst 113 were removed, mainly following retirement or relocation overseas. The BPSU mailing list continues to include selected groups of consultants other than paediatricians such as cardiologists, clinical geneticists and pathologists. Paediatric surgeons and child and adolescent psychiatrists and national burns units have also been receiving a report card in order to help with ascertainment of intussusception, conversion disorder and toxic shock syndrome.

Reporting rates for returning the orange cards remain high - the overall card return compliance rate for the year 2009, calculated as a proportion of orange cards returned, was 93.8% (35338/33145) a fall of 0.3% from 2008. Monthly response rates ranged from 96.8% in November to 92.8% in March with a median of 93.9%. To maintain this compliance rate respondents who have not returned card are sent a monthly email reminder. This return rate remains higher than any equivalent UK scheme and ranks highly against other national paediatric surveillance units.

South Scotland achieved the highest average yearly response rate – 98.3%. The Thames area showed a cumulative response rate of 91.1%, a fall of 0.6% on 2008. Full details of regional response rates are provided in Table 1 overleaf. Overall the response rate is still exceptional and is a testament to the willingness of clinicians to support the BPSU reporting scheme.

Workload of those reporting in the scheme

78% (2503) of participants reported no cases in 2009, 14% (450) reported a single case, 7.0% (228) reported between two and four cases and 1.0% (41) reported five or more cases. The greatest number of cases reported was by HIV/AIDS specialists, one of whom reported 138 cases. Specialties that had a particularly high level of reporting were paediatric neurologists (PIND), neonatologists and infectious disease specialists (AIDS/HIV, MRSA). Community paediatricians continue to make a significant contribution to the reporting, particularly to the PIND and HIV/AIDS studies and their continued involvement in the scheme is very much welcomed.

Table 1 Regional response rate 2008 and 2009

Region	Rank 2009	Rank 2008
Northern	7	7
Yorkshire	9	5
Trent	17	13
East Anglia	8	15
NWT	16	18
NET	20	20
SET	11	8
SWT	15	17
Wessex	5	7
Oxford	3	5
South Western	12	13
West Midlands	10	15
Mersey	18	18
North Western	4	20
Wales	2	8
North Scotland	13	17
South Scotland	1	7
West Scotland	14	5
Northern Ireland	6	13
Republic of Ireland	19	15

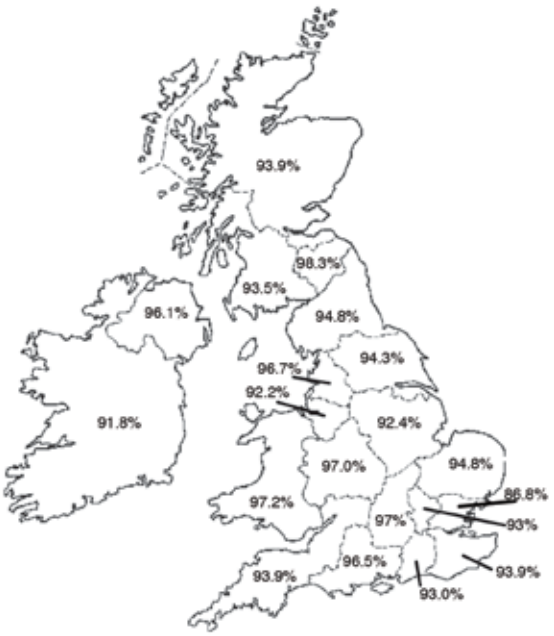

Figure 4. Average orange card return rate (%) by area, 2009

Table 2 Cases reported from June 1986 - December 2009 for conditions under surveillance at May 2010

	Reports (confirmed cases)						
	Date when reporting began	June 1986-Dec-96	Jan-96 Dec-00	Jan-01 Dec-03	Jan-04 Dec-06	Jan-07 Dec-08	Jan-09 Dec-09
Conditions under Surveillance							
HIV/AIDS	Jun-86	991 (691)	1017 (705)	1774 (1430)	2172 (1852)	1421 (1137)	675 (375)
Congenital rubella	Jun-91	72 (39)	49 (25)	26 (6)	13 (4)	11(2)	5 (2)
PIND	May-97		1067 (628)	612(318)	509 (300)	386 (266)	241 (173)
Genital herpes	Jun-07					33 (19)	7 (4)
IIH	Jul-07					276 (124)	95 (37)
CAH	Aug-07					213 (118)	63 (39)
CD	Oct-08					59 (19)	194 (57)
TSS	Oct-08					23 (8)	104 (29)
SUPC	Nov-08					16 (7)	75 (32)
SNH	May-09						46 (27)
CNS	Sep-09						67 (16)
GBS/FS	Sep-09						43 (14)
Total		**1063 (730)**	**2133 (1358)**	**2412 (2267)**	**2694(2156)**	**2438 (1607)**	**1615 (751)**

Table 3 Outcome of follow-up of the cases reported in 2009 for conditions under surveillance at May 2010

	Date when reporting began	Valid reports	%	Duplicates	Errors	(D&E) %	Not yet known	%	Total
Condition under surveillance									
HIV/AIDS	Jun-86	6,190	77	720	669	17	471	6	8050
Congenital rubella	Jun-91	78	44	34	59	53	5	3	176
PIND	May-97	1685	60	349	746	39	35	1	2815
Genital herpes	Jun-07	23	58	2	12	35	3	8	40
IIH	Jul-07	161	43	29	65	25	116	31	371
CAH	Aug-07	157	57	67	34	37	18	7	276
Conversion disorder	Oct-08	76	30	8	11	8	158	62	253
TSS	Oct-08	37	29	11	24	28	55	43	127
SUPC	Nov-08	39	43	7	25	35	20	22	91
SNH	May-09	27	59	0	0	0	12	26	46
CNS	Sept-09	16	24	7	7	21	36	54	67
GBS	Sept-09	14	33	2	2	9	26	60	43
Total		**8503**	**72**	**1236**	**1654**	**20**	**955**	**8**	**12355**

HIV	Human immunodeficiency virus: reports of AIDS in June 1986 include cases previously seen; case definition extended to include HIV infection in January 1990
PIND	Progressive intellectual and neurological deterioration
IIH	Idiopathic intracranial hypertension
CAH	Congenital adrenal hyperplasia
CD	Conversion disorder – excludes cases seen by psychiatrists
TSS	Toxic shock syndrome
SUPC	Sudden unexpected postnatal collapse
SNH	Severe neonatal hypernatraemia
CNS	CNS inflammatory demyelinating diseases
GBS/FS	Guillain-Barré/Fisher syndromes

Classification of case reports

Valid reports:
Cases confirmed at follow-up as being both unique (i.e. not a duplicate) and satisfying the diagnostic criteria set out in the case definition. Confirmed cases reported to the BPSU but already known to the investigators from another source are included.

Invalid reports:
These include:

- duplicate reports of cases already reported to the BPSU, and
- reporting errors arising as a result of a misdiagnosis, the wrong box on the orange card being ticked, the case not meeting the diagnostic criteria set out in the case definition or an inability to follow-up a case.

Outcome not yet known:
Outcome of follow-up not yet received by BPSU (by May 2010).

4 Surveillance Studies Undertaken in 2009

CNS Inflammatory Demyelination

Key points

- CNS inflammatory demyelinating diseases (CIDDs) are rare neurological disorders in childhood but may culminate in physical and cognitive disability, or ultimately be diagnosed as Multiple Sclerosis (MS).
- Surveillance commenced in September 2009 for 13 months via the British Paediatric and Ophthalmological Surveillance Units. Outcomes (relapse and MS diagnosis) will be determined at one and two years.
- For the first six months a total of 104 cases have been reported (92 BPSU, 12 BOSU).
- Clinical and MRI images are analysed and cases classified on a three monthly basis by an expert panel comprised of paediatric neurologists and neuroradiologists. Of the first 34 cases, 18 were confirmed, seven were duplicate notifications and nine were ineligible for inclusion.

Summary

CNS inflammatory demyelinating diseases (CIDDs) are rare disorders in childhood that may culminate in physical and cognitive disability, or ultimately be diagnosed as Multiple Sclerosis (MS). Children with MS present with a demyelinating episode involving single or multiple symptoms prior to developing a second event (the majority usually within two years) to then meet criteria for MS diagnosis. At first presentation, children are diagnosed with an acute disseminated encephalomyelitis (ADEM), optic neuritis, transverse myelitis, neuromyelitis optica, or another clinically isolated syndrome (CIS). It is not clear at the onset of symptoms which of these children will go on to develop MS.

There is evidence that 5% of Multiple Sclerosis (MS) cases manifest in childhood. The available literature, however, is limited to small series or retrospective reviews of established adult MS populations. The true incidence of childhood CIDDs is unknown, and the subject of recent international interest (International Paediatric MS Study Group 2007). This group recently published consensus definitions of paediatric CIDDs to facilitate uniformity in future research.

Unravelling the epidemiology, natural history, radiological features of paediatric CIDDs is crucial as there is currently no available biomarker for ADEM, CIS or MS diagnosis. For acute demyelinating illnesses, or relapses of MS, corticosteroids are the mainstay of treatment. Important newer weapons against MS are “disease modifying agents” that decrease relapses by modifying the immune system. There appears to be benefit in the early initiation of these therapies in adults, however, little is published on their use in children. This study is an essential pre-requisite for the design of any prevention or treatment trials and planning service provisions.

To our knowledge, this is the first nationwide study since the international proposal of new consensus definitions. The study aims to determine the incidence of childhood CIDDs and establish one and two year outcomes of recurrence (and progression to MS).

Dr Michael Absoud

Objectives

The specific aims of the project are, within the UK and Ireland, to:

- determine the incidence of childhood acquired demyelinating disease and MS
- report clinical features, and distribution by age, sex and ethnic group
- identify the frequency of proposed predictors (clinical and radiological) for MS in children
- establish short term outcomes and recurrence after a first demyelinating event in children
- determine whether these children can be classified according to the new international classification and characterise those that cannot
- increase awareness amongst paediatricians and describe current practices and treatments offered.

Surveillance duration

Surveillance period: September 2009 – September 2010 (inclusive).
Follow-up: Outcome - one and two year questionnaires (September 2010-September 2012).

Methodology

Cases are being ascertained through the British Paediatric Surveillance Unit (BPSU) and British Ophthalmological Surveillance Unit (BOSU). British Paediatric Neurology Association members, who are consultants and who do not receive the 'orange card' have been added to the mailing list for the duration of the study. Monthly notification cards will be sent to all registered Consultant Paediatricians, Paediatric Neurologists, and Ophthalmologists. Clinicians who notify a case will be asked to complete a brief questionnaire seeking information on diagnosis, clinical features, and also to provide a copy of the MRI. An expert panel meet on a quarterly basis to review all cases reported. Clinicians will be asked to report outcomes using questionnaires sent at one and two years following diagnosis, and information on the recurrence of the demyelinating event (if this occurred), death, current functional status and treatment will be sought.

Case Definition

Children under 16 years experiencing clinical neurological events consistent with site specific inflammatory CNS demyelination and confirmed with white matter changes on MRI (except in optic neuritis) as defined below in Table 4.

Excluding:
Children presenting with their second or subsequent demyelinating episode.

Additional sources of data

Consultant Ophthalmologists via the British Ophthalmological Surveillance Unit (BOSU).

Analysis

During the first six months a total of 104 cases have been reported (92 BPSU, 12 BOSU).

Clinical and MRI images are analysed and cases classified on a three monthly basis by an expert panel comprised of paediatric neurologists and neuroradiologists. At the first meeting 34 cases were reviewed, 18 cases were confirmed. Seven cases were excluded as they were duplicate notifications and nine others were excluded as they were reported outside the surveillance period, cases did not satisfy the inclusion criteria, or an alternative diagnosis was confirmed.

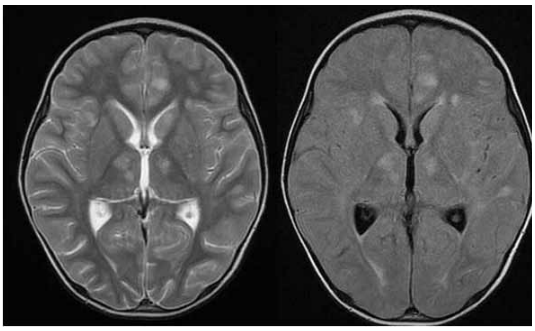

Figure 5: MRI in patient with pneumococcal meningitis demonstrating multiple vasculitic lesions (case was excluded).

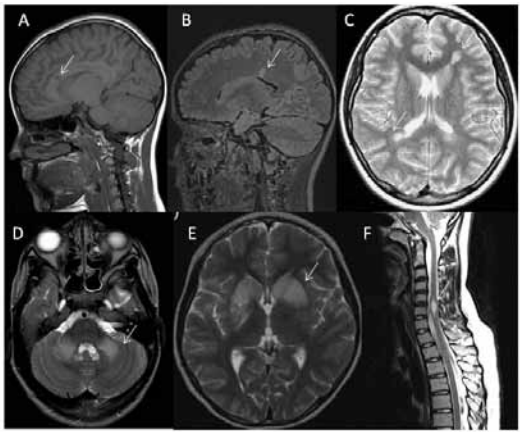

Figure 6: MRI in patient with polyfocal CIS (A,B,C) demonstrating black hole, corpus callosum and periventricular lesions. MRI in patient with ADEM (D,E,F) demonstrating diffuse bilateral cerebellar, basal ganglia lesions and a spinal lesion.

From 18 confirmed cases (Figure 5-6):

(i) 3 had Acute Disseminated Encephalomyelitis (ADEM)

(ii) 15 had Clinically Isolated Syndromes:

- 4 had Transverse Myelitis (one reclassified by the expert panel as reported as ADEM)
- 3 had Optic Neuritis

Table 4

Acute Disseminated Encephalomyelitis (ADEM)	A clinical event (subacute or acute, poly-symptomatic, must include encephalopathy) due to a presumed inflammatory or demyelinating cause affecting multifocal areas of the CNS, and MRI white matter changes.
Clinically Isolated Syndrome (CIS)	A first acute clinical episode of CNS inflammatory demyelination (monofocal or multifocal but does not include encephalopathy) and MRI white matter changes.
Transverse Myelitis	Weakness and/or numbness of both legs (with or without involvement of arms) and supported by demyelination on MRI of spine.
Optic Neuritis	Subacute/acute loss of vision with a presumed demyelinating origin.
Neuromyelitis Optica (NMO)	Optic neuritis and associated myelitis.

- 8 had another Clinically Isolated Syndrome (five were reclassified by the expert panel as originally reported as ADEM).

(iii) None had Neuromyelitis Optica

Eleven of the 18 were female and seven were male. The age range at diagnosis was 1 year 3 months to 15 years of age (median 10 years 7 months). Using UK Census ethnic classifications 15/18 cases were recorded as White and three cases were Asian.

Discussion

Most reported cases were CIS (15/18), with a few cases of ADEM (3/18). The expert panel reclassified five cases reported as ADEM to CIS as these cases did not have encephalopathy (behavioural change or altered consciousness) as a presenting feature. This is important as there is evidence from the literature that children with CIS are more likely to have relapses. Over the next year we will determine the incidence of childhood CNS Inflammatory diseases, report clinical and radiological features and identify frequency of proposed predictors.

Please note that data presented here is provisional, not peer reviewed, and limited to only the first 34 cases reviewed by the expert panel.

Funding

Multiple Sclerosis Society and Action Medical Research Charities.

Ethics approval

The study has Black Country Research Ethics Committee (09/H1202/92) and NIGB Ethics and Confidentiality Committee approvals (ECC/BPSU 4-03 [FT1] /2009).

Support Group(s)

1. MS Society (www.mssociety.org.uk)
2. Young MS team, 372 Edgware Road, London NW2 6ND, Tel: 020 8438 0799 Monday to Friday 9-4pm. E-mail: youngms@mssociety.org.uk
3. National MS Helpline, Freephone: 0808 800 8000 (Monday to Friday, 9am-9pm)

Acknowledgements

We are very grateful to all paediatricians who have completed monthly cards, particularly those who have notified cases and returned completed questionnaires and MRI copies to us. We also wish to thank all the secretaries and radiology departments who have assisted with administrative procedures such as posting case report forms and anonymised copies of MRIs.

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Congenital Adrenal Hyperplasia

Key points

- Congenital adrenal hyperplasia (CAH) is found in approximately 1 in 17,000 children in the UK; boys are under-represented and children of Asian ethnicity are over-represented.
- Children presenting after one year of age may already have irreversible manifestations of precocious puberty or advanced bone age.
- Mortality appears low, consistent with recent estimates from other countries; however deaths may be under-ascertained if based on BPSU methodology alone.

Summary

Congenital adrenal hyperplasia (CAH) is a recessively inherited deficiency of cortisol production with an estimated birth prevalence of 1 in 10,000 to 20,000. Just over half of those affected have a salt wasting form which can present in newborns with an acute life threatening adrenal crisis.[1] As the condition is often associated with excess androgen production, girls may be virilised and incorrectly assigned as boys at birth. CAH presenting after the neonatal period is often characterised by precocious puberty or accelerated growth, which can have long-term irreversible consequences.

Early detection by newborn screening combined with cortisol and mineralocorticoid replacement can prevent life-threatening episodes, and ensure normal growth and sexual development. Newborn screening for CAH is undertaken in most US states and many European countries, but has not been introduced in the UK[2] reflecting inconsistent information about disease burden. It is now timely to obtain better epidemiological data on CAH in the UK to inform future newborn screening policy.

The BPSU study of CAH completed identification of new cases in August 2009 and one-year follow-up will finish in August 2010.

Objectives

The objectives of this study are to:

- determine the incidence of clinically presenting CAH in children under the age of 16 years in the UK (excluding Northern Ireland), and to report its distribution by age, sex and ethnic group
- report the clinical features at presentation
- report the proportion of cases who become clinically unwell by 5-8 days of life

Dr Rachel Knowles

- report early clinical management and morbidity and mortality to one year post diagnosis, including the proportion of girls with initially incorrect sex or sex reassignment.

Study duration

Surveillance period: August 2007 - August 2009 (inclusive)
Follow-up: One year outcome follow-up data sought to August 2010.

Methodology

Case definition

A child will be considered to have a diagnosis of CAH:

IF AT LEAST ONE of the following clinical features is found:

- Adrenal crisis or adrenal insufficiency
- Virilisation of female genitalia
- Precocious puberty
- Accelerated skeletal age
- Short stature
- Hypertension
- Incomplete masculinisation of male genitalia
- Positive family history in first degree relative

AND AT LEAST ONE of the following criteria are met:

- Elevated 17 OHP in blood test
- Positive synacthen stimulation test
- Test result diagnostic of rarer form of CAH, e.g. 3β-hydroxysteroid dehydrogenase (3β-HSD) deficiency or 11β-hydroxylase (11β-OH) deficiency

The diagnosis of CAH may be made following clinical presentation, investigation of a sudden unexpected death, or diagnosis in a sibling or other affected family member.

New diagnoses in children aged up to but not including 16 years of age were sought.

All notifications were reviewed by an expert diagnostic review panel to determine if they met the criteria for inclusion as a confirmed case.

Additional sources of data

A Biochemical Surveillance System for CAH (BioCAHSS) with direct reporting of cases to the study investigators was established with UK laboratories that provided diagnostic testing for CAH using 17-hydroxyprogesterone. During the period from 1st August 2007 until 31st January 2008, participating laboratories retrospectively reported new cases to the investigators. Between 1st February 2008 and 31st January 2009, laboratories received a BioCAHSS monthly reporting card and prospectively reported new cases.

Analysis

BPSU case notifications: Over 25 completed months of surveillance, there were 275 cases notified on the BPSU Orange Card and a questionnaire was obtained for 260 (94%) of these. There were 68 duplicate notifications and 34 cases were excluded as the diagnosis was made before August 2007 or in error. A further 176 reports were notified by laboratories, and 124 (70%) questionnaires were returned. Using information from laboratory questionnaires, 65 cases were matched with BPSU questionnaires and of the remaining 59 reports eight additional cases were subsequently identified following contact with clinicians. Questionnaires from 158 reported cases were reviewed by the expert Diagnostic Review Panel (DRP): 148 were confirmed as CAH, six cases were not CAH and for four cases, there were insufficient data to determine if they were cases or not. Further analyses are concerned with the 148 confirmed cases only.

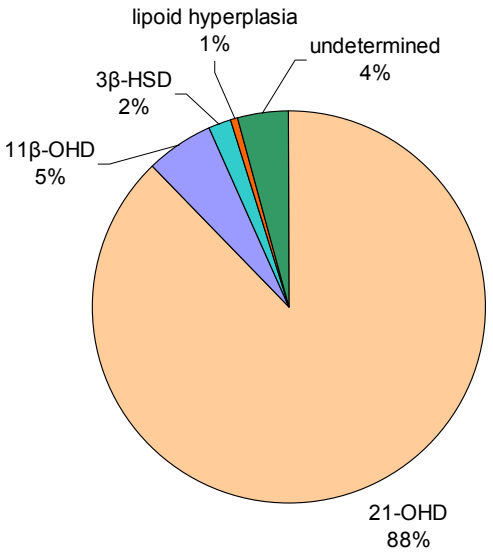

Figure 7: CAH subtypes identified children of all age-groups (n=148)

The majority (88%) of cases were 21-hydroxylase deficiency; however there were also cases of 11 β -hydroxylase deficiency (5%), 3β-hydroxysteroid dehydrogenase deficiency (2%), lipoid hyperplasia (1%) and in six (4%) cases subtype could not be determined (Figure 7).

There were 61 boys and 87 girls, thus boys were significantly under-represented and comprised 42% of the study population (95% confidence interval [CI] 34 to 49%). Using UK Census ethnic classifications, 24% of cases were Asian compared with 6% of the child population under 16 years in England, Wales and Scotland.[3]

The majority (90 [61%]) of children with CAH presented in the first year of life and the estimated birth prevalence was 1 in 17,240. 82 (91%) children diagnosed in the first year of life had presented by 30 days, with a further eight presenting between one month and one year.

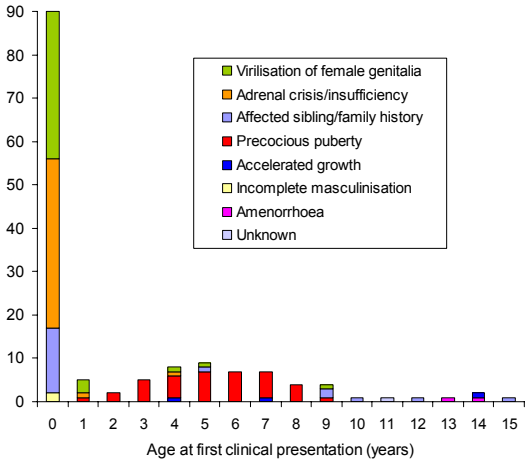

Figure 8: Children with CAH by age at clinical presentation and mode of presentation (n=148)

Of 34 girls presenting with virilisation of the genitalia in the first year of life, 30 were recognised within the first two days. Adrenal crisis was reported in 33 children, of whom the earliest presented at nine days of age. In the first month, boys were more likely than girls to present with more severe manifestations such as adrenal crises (Figure 8).One boy died at around four months of age with complications unrelated to CAH.

During 25 months of surveillance, 58 children presented clinically with CAH aged 1-15 years, median age at presentation was six (interquartile range 5 – 9) years. Most presented with precocious puberty (38/58; 64%). On further investigation, 38 (64%) children were found to have advanced bone age.

One year outcome data are not yet available.

Please note the data presented are provisional, not peer reviewed and definitive conclusions should not be drawn from them.

Discussion

CAH affects around 1 in 17,000 children in Great Britain, thus is of similar birth prevalence to other conditions for which newborn screening is currently offered. Our findings suggest boys are under-represented and present with more severe manifestations in infancy. Children of Asian ethnicity are over-represented. Each year, CAH presents clinically in around 25-30 children aged 1-15 years, often with irreversible manifestations of precocious puberty or accelerated growth. Although CAH mortality appears low, deaths may be under-ascertained if based on BPSU methodology alone.

Funding

Department of Health.

Ethics approval

Thames Valley MREC (Ref: 07/MRE12/25); PIAG Section 60 Support (Ref: PIAG/BPSU 1-05(FT4)/2007).

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Congenital Rubella

Key points

- Rubella infection early in pregnancy can be transmitted to the fetus (congenital rubella) and lead to serious birth defects in the infant, including damage to hearing, vision and the heart. Congenital rubella continues to be extremely rare in the UK and Ireland; the last two reported births were both late in 2008.

- Among 18 infants with congenital rubella born and reported in the UK or Ireland since 1997, 11 had mothers who acquired their infection abroad.

- In most recent cases, maternal infection was not diagnosed in pregnancy, and the diagnosis of congenital rubella infection in the newborn baby was unexpected.

Summary

The National Congenital Rubella Surveillance Programme (NCRSP) was established in 1971 to monitor congenital rubella births in England, Scotland and Wales. Active surveillance through the BPSU started in 1990, and since then reports have also been received from Ireland and Northern Ireland. Diagnosed rubella infection in pregnancy is monitored through laboratory reports to the Health Protection Agency (HPA) or Health Protection Scotland (HPS), and has remained at low levels in recent years (<10 a year). Women with diagnosed first trimester infection usually opt for termination of pregnancy in the UK; most mothers of congenitally infected infants are unaware of their infection until their baby is diagnosed.

The World Health Organisation Regional Office for Europe set a target for elimination of measles and rubella, and prevention of congenital rubella infection (<1 case of congenital rubella syndrome per 100,000 births) by 2010. Long-standing vaccination programmes have already led to the virtual elimination of congenital rubella in the UK and Ireland.[1] Nevertheless, sub-optimal MMR (Measles, Mumps, Rubella vaccine) coverage, and migration within Europe present major challenges to reaching this target, and maintaining control in the long term. As a result of over 10 years of inadequate vaccine uptake with little or no wild virus circulating, there are substantial pockets of susceptible children in parts of the UK and Ireland. In addition, inward migration from countries without long-standing high uptake rubella vaccination programmes has lead to greater concentrations of susceptible individuals in some areas, often the very places where MMR uptake has been low

Dr Pat Tookey

(e.g. parts of London). Under these circumstances it is possible that rubella could once again start to circulate in the British Isles, as it still does in many parts of the world.

Comprehensive national surveillance through the BPSU therefore remains extremely valuable. Timely reporting by paediatricians will help us to recognise any resurgence in numbers at an early stage, and assist in the implementation of appropriate control measures. Congenitally infected infants can excrete rubella virus for an extended period of time, and they must be diagnosed and managed appropriately to avoid the risk of contributing to further community transmission.

Objectives

To monitor the effectiveness of the rubella immunisation programme by determining the incidence of congenital rubella and investigating the circumstances surrounding any new cases.

Study duration

Surveillance period: Surveillance through the BPSU began in January 1990 and is reviewed regularly.

Methodology

Case definition

Any infant (live or still born) or child up to 16 years of age who, in the opinion of the notifying paediatrician, has suspected or confirmed congenital rubella (Figure 3) with or without defects, based on history, clinical, and/or laboratory findings.

CDC-Public Health Image Library

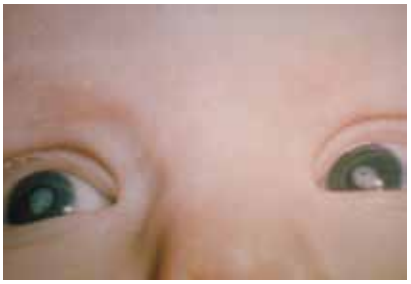

Figure 9: Cataracts due to congenital rubella syndrome

This includes “imported cases”, i.e. children born in the British Isles where the maternal infection occurred abroad, **AND** children who were born abroad, as well as British-born infants whose mothers acquired infection in the British Isles.

Analysis

There were five reports to the BPSU in 2009. Two were duplicate reports of an infant born in 2008 and already reported directly to the NCRSP, and one was a late report of a child born in the UK in 2006 whose mother had acquired infection abroad in her country of origin. One child aged over 10 years and born abroad was reported, and one report has not yet been clarified.

No children born in 2009 have been reported.

The number of reported congenital rubella births and rubella associated terminations declined from about 50 births and 740 terminations in 1971-75 to 22 births and 54 terminations a year in 1986-90. Since active surveillance began in 1990, 172 reports have been made through the BPSU (Table 5). Of 149 reports from England, Scotland and Wales, 52 are confirmed or compatible, previously unreported cases, four are possible cases, and 14 had already been reported from another source; the remaining reports were: duplicates (27), reporting errors (46), and six where further information could not be obtained. Sixteen reports were from Northern Ireland or Ireland, and included four children with confirmed congenital rubella (one born in the 1980s, two in the 1990s and one since 2000), and a fifth possible case (born in the 1980s); the other eleven Irish reports were duplicates, errors or previously reported.

Since the reporting definition was extended in 2005, seven reports have related to six children who were born abroad. In previous years reports of foreign-born children were not requested, and any such reports were categorised as errors. These six children are not included in Table 6 since the main aim of the surveillance is to monitor births in the UK or Ireland. However, in order to make sure cases are not missed, we request reports of all newly diagnosed cases and collect minimal data on these children born abroad.

Congenital rubella births in the UK or Ireland 1990-2009: Sixty-two children and three stillborn infants with confirmed or compatible congenital rubella have been born and reported since the beginning of active surveillance in 1990; 48 of these (74%) were first reported through the BPSU (Table 6). Eighteen of these infants were born in the last 10 years, including one born in Ireland, and one stillborn infant. Although 11 were imported cases with maternal infection acquired abroad (six in Southern or South Eastern Asia, five in Africa), seven infants were born to women whose infection occurred in the UK.

At least 80 terminations for rubella disease or contact in pregnancy have been recorded by the Office for National Statistics in England and Wales since 1990, but annual data are no longer published since the numbers are so low.

Discussion

The number of reported cases of congenital rubella has remained at a very low level since the last upswing in 1996, but virtually all reports concern infants with serious rubella-associated defects present at birth. It is possible that some infants with less obvious signs of congenital rubella are not diagnosed and reported.

Rubella susceptibility in pregnant women in the UK varies by ethnic group, with women from many parts of Asia and Africa having particularly high susceptibility rates especially if they are having their first baby.[2] Women originating from countries without comprehensive and long-standing vaccination programmes are likely to be at higher risk if there is renewed circulation of rubella here. Even while rubella infection is

Table 5: Congenital rubella reports to BPSU 1990-2009 (includes births occurring in earlier years)

	Confirmed or compatible	Possible cases	Cases already reported	Duplicate, error or lost	Total
Place of birth					
Engalnd, Scotland and Wales	52	4	14	79	149
NI and Ireland	4	1	2	9	16
Born abroad (reports 2005-2009 only)	3	3	0	1	7

Table 6: Confirmed and compatible congenital rubella births in the UK and Ireland 1990-2009

Year of birth	Primary source of notification: BPSU	Other	Total
1990-94*^	22	10	32
1995-99	12	4	16
2000-04*	10	1	11
2005-09	4	2	6
Total	**48**	**17**	**65**

* Includes a stillborn infant
^ Includes a set of triplets, one of whom was stillborn

rare in the British Isles, susceptible women who travel abroad during early pregnancy may come into contact with infection. Health professionals, particularly paediatricians and those working in primary care and antenatal care, must continue to be aware of the potential serious implications of rash illness in early pregnancy, the guidelines for the management of rash illness in pregnancy[3], and also of the early signs of congenital rubella.

Please continue to look out for and notify all infants with suspected congenital rubella, whether or not they have the associated typical defects, and regardless of country of birth.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

The Health Protection Agency makes a contribution towards the costs of the surveillance. Additional support comes from the Centre for Paediatric Epidemiology and Biostatistics at the UCL Institute of Child Health.

Ethics approval

The London Multicentre Research Ethics Committee reaffirmed approval in 2005 (Ref: 05/MRE02/2). Surveillance of congenital rubella through the BPSU also has PIAG approval (PIAG/BPSU 2-10(f)/2005).

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Acknowledgements

We are extremely grateful to all participating paediatricians, especially those who have notified cases and completed questionnaires.

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Conversion Disorder

Key points

- Conversion Disorder in children is a condition whereby children may experience apparent paralysis, blindness or other sensory loss with no medical explanation.
- This collaboration between the BPSU and Child and Adolescent Psychiatry Surveillance System is the first study in the UK and Ireland to investigate incidence.
- There have been 180 confirmed cases, with girls and older children (aged 12-15 years) over-represented in the sample.
- Motor weakness, abnormal movements and pseudo-seizures were the most frequent clinical manifestations.

Summary

Conversion Disorder is an uncommon but highly disabling condition in childhood. Affected children may experience paralysis, blindness, deafness or other sensory losses without any medical explanation. These children are often severely impaired and at risk of serious long-term physical and psychosocial complications including, educational failure, social isolation and psychiatric morbidity. The condition can be associated with extensive use of paediatric and allied health resources. Despite the huge personal suffering and health resources implications of Conversion Disorder, the epidemiology and clinical burden in children has not been documented in the UK. We are conducting the first study to describe the frequency, pattern and short-term outcomes of Conversion Disorder in children in United Kingdom and Ireland. The study involves joint surveillance by the BPSU (for paediatricians) and Child and Adolescent Psychiatry Surveillance System (CAPSS) (for Child and Adolescent Psychiatrists). The study's findings could help to inform service planning for children with this seriously impairing condition.

Objectives

The study aims to:

- estimate the incidence of Conversion Disorder in children in the UK and Ireland
- describe the clinical features of Conversion Disorder at presentation
- describe associated co-morbid psychiatric or medical illness and family history of psychiatric illness
- describe current management of children with Conversion Disorder including investigations
- determine the duration of illness and the short term outcome.

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Study duration

Surveillance period: October 2008 – December 2009 (inclusive).
Follow-up: One year outcome follow-up data sought to December 2010.

Methodology

As cases may present to both paediatricians and child and adolescent psychiatrists, we conducted a dual surveillance involving BPSU and CAPSS in order to capture the full spectrum of cases. This dual surveillance strategy proved effective in a previous study of Early Onset Eating Disorders in the UK. Reporting by more than one clinician is encouraged to maximise case ascertainment. A questionnaire is sent to clinicians reporting a case to gather demographic and relevant clinical information. For all valid cases, a second questionnaire will be sent to the reporting clinician a year after the case was first reported. This will provide information on treatment received, duration of the disorder and outcome. A panel of experts reviews all reported cases to confirm whether or not they meet the case definition.

Case definition

Any child younger than 16 years newly diagnosed with Conversion Disorder during the previous month in the UK and Ireland.

Conversion Disorder is DEFINED as:

The presence of one or more symptoms and or signs affecting motor function (e.g. weakness, abnormal gait or movements, difficulty with swallowing, or loss of speech), and or sensory function (e.g. loss or diminished sensation of touch, sight, or hearing), and or non-epileptic seizures (also known as pseudo seizures).

AND

the following symptoms and/or signs:

- Cannot be adequately explained by a medical condition after full investigation (according to the judgement of the treating clinician), **and**

- Have no evidence that they have been intentionally produced, **and**
- Cause significant distress and or interference in daily activities such as with self care, school attendance, play, or family activities for up to seven days or longer, **and**
- Are accompanied by psychological factors that are judged to be associated with or have contributed to the presentation.

EXCLUSION CRITERIA

Certain cases are excluded, as follows:

- Cases where the clinical picture is predominantly or exclusively pain or fatigue, and or
- Cases where the dominant picture is another psychiatric disorder, such as depression or psychosis diagnosed by a child and adolescent psychiatrist, or tic disorder.

Additional sources of data

The Child and Adolescent Psychiatry Surveillance System (CAPSS) is capturing additional cases.

Analysis

A total of 458 notifications were received of which 180 have been confirmed as valid cases.

Of the first 140 confirmed cases to be reviewed 85 (60.7%) and 49 (35%) were reported through BPSU and CAPSS respectively. A further 6 (4.3%) were reported jointly (Figure 10).

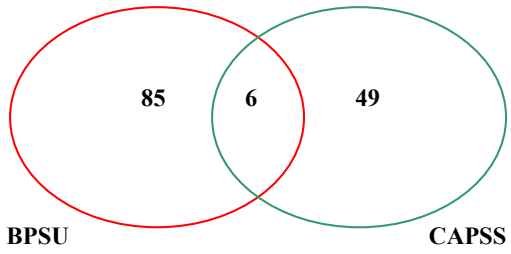

Figure 10 Confirmed cases following review

Seventy seven percent (N=108) of confirmed cases were girls. The mean age of cases is 12.9 years (SD = 2.1years, Range 7-16, N=139).

The most frequent presenting symptoms were motor weakness 74 (60%), abnormal movements 51(43%), and pseudo-seizures 45 (40%).

The three most frequent associated stressors were bullying 24 (19%), bereavement 21 (16%), and parental separation 18 (14%). Anxiety disorder was the most common co-morbid psychiatric condition 27(19.6%).

Most cases 108 (77%) required in-patient admission (80%) for an average of 15 days (range 1-147 days). The children were extensively investigated including with MRI (60%), EEG (53%) and CT scan (24%). Each child required was seen by an average of four professionals including paediatricians (92%), child and adolescent psychiatrists (67%), neurologists (60.5%), clinical psychologists (51%), and physiotherapists (49%).

Discussion

Adolescent girls were most frequently affected by conversion disorder in this cohort. The condition was associated with a range of stresses and anxiety disorder. Addressing these stresses and anxiety disorder may therefore be helpful. This study shows that childhood conversion disorder engenders huge clinical, professional and technical costs, which need to be considered by health planners.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

BUPA Foundation.

Ethics approval

Charing Cross Hospital MREC (Ref: 08/H0711/30). PIAG Section 60 Support (Ref: PIAG/BPSU 3-06(FT1)/2008).

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Genital Herpes

Key points

- The study aimed to identify the incidence of genital herpes in young children.
- The twenty five months case ascertainment period ended in April 2009, follow up is complete and analysis is nearing completion.
- Twenty three cases were identified demonstrating the extreme rarity of genital herpes in young children.
- Preliminary findings suggest that few cases are referred for child protection investigations and that sexual abuse among cases is infrequently confirmed.

Summary

Genital herpes in prepubertal children is rare, and when it occurs, raises the question of possible sexual abuse. Paediatricians currently have very little evidence on which to base an opinion on possible mode of transmission, yet their advice is key to whether or not a child protection investigation proceeds. A literature review has highlighted the inconsistency in current guidelines and the weakness of epidemiological data on this condition.[1]

This study will provide data on the incidence of genital herpes in young children in the UK, and describe clinical, social and other features which might point to possible modes of transmission (sexual and non-sexual). It will not be able to confirm the mode of transmission because there is no way of definitively ascertaining whether sexual abuse has occurred or not.

Dr Richard Reading

A national surveillance study is necessary to provide such data because of the rarity of the condition and the need to collect population based data to eliminate referral bias. Most cases will be referred to a paediatrician at some stage in the initial presentation because of the child protection implications.

Objectives

The study aims to:

- estimate the incidence of genital herpes in children < 11 years in the UK and Ireland by age and sex
- describe the clinical presentation of cases
- describe clinical, developmental and social features which might indicate possible modes of transmission
- describe the extent and outcome of child protection enquiries consequent on a diagnosis of genital herpes.

Study duration

Surveillance period: April 2007 – April 2009 (inclusive).
Follow-up period: At one year to end April 2010.

Methodology

Case definition

Children age one month to ten years inclusive with typical herpetic vesicular lesions in genital or perineal area presenting as new cases to secondary care (includes recurrent cases seen for the first time in secondary care).

- Proven cases: Herpes simplex isolated by viral culture, or PCR in association with typical lesions.
- Probable cases: Typical clinical lesions, with or without supportive evidence e.g. rising paired antibody titres, in whom definitive virological testing was not performed.

Excluded cases: Recurrent lesions previously identified and seen in secondary care. No viral isolation and no supportive clinical or virological evidence.

Additional sources of data

An estimate of possible under ascertainment was made by cross-checking the data with confidential laboratory reports to the HPA. These confidential data were not released to the investigators but numbers of potentially eligible cases missed in the BPSU surveillance were made available.

Analysis

Data collection is complete including all follow-up information, and analyses are being conducted. The following results are preliminary, have not been subject to peer review or confirmation and should only be regarded as indicative. We also recognise the need to avoid any possibility of inadvertent identification of cases so have only reported approximate frequencies without any detailed cross-tabulation of the data.

The incidence of virologically proven genital herpes in children under age 11 years is extremely rare at around 0.1 per 10^5 children per year. The incidence of all proven and suspected cases is only marginally higher. Of those with viral typing information, the majority of cases were infected by Herpes Simplex Virus Type 1.Three quarters of cases were female and two thirds of cases were under five years of age. Few cases had other indicators of possible sexual abuse. One third of proven cases were referred for formal child protection investigations and none of these were confirmed to have been sexually abused, although ten percent of all proven and probable cases were placed on a child protection plan or equivalent. Investigation for herpes and other sexually transmitted infections failed to conform to published guidelines in a substantial proportion of cases.

Discussion

Despite the lack of adequate medical and child protection investigation in a proportion of the cases, there are indications from the data that sexual abuse may not be the predominant way that children are infected, compared with adults where sexual activity is almost always thought to be the mode of transmission. If this is the case, then it supports a cautious approach to the implications of a diagnosis of genital herpes in a young child. This caution is reflected to an extent in recent sexual abuse guidelines in the UK and the US, and this data will provide supportive evidence for those recommendations.[2,3]

There is a need to improve the level of virological investigation in cases with genital ulceration or blisters, and to conduct sexually transmitted infection screens in children with genital herpes to a standard recommended in the current UK STI guidance.[4] Referral for child protection investigations should be considered in more cases in which there is no obvious non-sexual mode of transmission evident.

It is likely these data will inform future UK and US guidance for the investigation of possible child sexual abuse. While the implications for child protection of a diagnosis of genital herpes are less certain than was previously thought, similar studies are required into the outcomes of other possible sexually transmitted diseases in children. Comparative data will be particularly important for conditions such as Gonorrhoea and Chlamydia which are generally thought to indicate a much stronger likelihood of sexual transmission. Accordingly, a BPSU study on Gonorrhoea, Syphilis, Chlamydia and Trichomonas is currently underway. Case ascertainment began in January 2010 and will continue to January 2012.

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Ethics approval

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Ms Sally Donnely, Patient and Public Involvement in Research, Norfolk.

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Guillain-Barré syndrome and Fisher syndrome

Key points

- Following the introduction of a H1N1 vaccine it was considered necessary to monitor for Guillain-Barré syndrome (GBS) as it is believed immune stimulation plays a role in its development.
- Due to the need for a rapid response to this public health emergency, with the assistance of the BPSU this study was fast tracked through the application and review process.
- More GBS cases have been reported than were expected on the basis of a previous BPSU study.

Summary

Guillain-Barré syndrome (GBS) is an important cause of acute flaccid paralysis worldwide and it is believed that immune stimulation plays a central role in its pathogenesis. Fisher syndrome (FS) was described in 1956 and was hypothesised to be a form of GBS. In some cases the clinical findings have features of both GBS and FS so it makes sense to include both conditions in this study.

Dr Chris Verity and team

GBS has been identified as one of the key adverse events that would need to be monitored should influenza vaccines be used to combat a future pandemic. As the current pandemic results from an H1N1 swine influenza virus, this surveillance is all the more imperative given the association between the H1N1 swine influenza vaccines used in the US in 1976 and GBS[1]. Since influenza-like-illness has also been shown to be associated with an increased risk of GBS[2], it is possible that even if swine influenza vaccines do cause GBS, this risk may be offset by the protection they offer against influenza itself. Thus, both vaccination and swine influenza illness need to be evaluated as potential risk factors for GBS.

Objectives

To determine how many new cases of Guillain-Barré syndrome/Fisher syndrome in children

and young people (aged 16 years and under) are being seen by paediatricians each month and to determine the proportion of these that are temporally associated with a recent influenza infection or vaccination.

Study duration

Surveillance period: September 2009 to September 2011 (inclusive).

Methodology

A questionnaire will be sent to each paediatrician who reports a case via the BPSU office. The questionnaire will ask about the clinical history, relevant physical findings and results of investigations in children with GBS. The team at the HPA will also be able to contact the GP or health clinic to obtain information about any vaccinations (type, batch number etc) given to the child (this information would not be available to us via the child's hospital notes).

Six months after the initial notification to us we will send a brief follow up questionnaire to paediatricians asking about clinical outcome and the results of any outstanding diagnostic tests.

We have e-mailed all paediatricians via the BPSU advising them about the pathological specimens that they should consider collecting in children they see with GBS – these samples will be for clinical and not for research purposes. In addition the HPA will provide advice to paediatricians if necessary. Blood samples from cases will be requested for testing for antibodies to H1N1 swine influenza. Samples collected locally will be sent to the HPA – this is an established pathway for clinical specimens. No specimens will be sent to the surveillance team in Cambridge.

Case Definition

Guillain-Barré syndrome (GBS)

The presence of

- Acute onset of bilateral and relatively symmetric flaccid weakness/paralysis of the limbs with or without involvement of respiratory or cranial nerve-innervated muscles **AND**
- Decreased or absent deep tendon reflexes at least in affected limbs **AND**
- Monophasic illness pattern, with weakness nadir reached between 12 hours and 28 days, followed by clinical plateau and subsequent improvement, or death **AND**
- Electrophysiologic findings consistent with GBS **AND**
- Presence of cytoalbuminologic dissociation (elevation of cerebrospinal fluid (CSF) protein level above laboratory normal value, and CSF total white cell count <50 cells/mm3) **AND**

Absence of an alternative diagnosis for weakness

Fisher Syndrome (FS)

- Acute onset of all three of: bilateral ophthalmoparesis, bilateral reduced or absent tendon reflexes, and ataxia Ophthalmoparesis, tendon reflexes, and ataxia are relatively symmetric. Ptosis or pupillary abnormalities may be present in the setting of the ophthalmoplegia. The clinical severity of each component may vary from partial to complete. **AND**

- Absence of limb weakness** **AND**
- Monophasic illness pattern, with clinical nadir reached between 12 hours and 28 days, followed by clinical improvement, with or without treatment **AND**
- Presence of cytoalbuminologic dissociation (elevation of cerebrospinal protein above the laboratory normal, with total CSF white cell count <50 cells/mm3]) **AND**
- Nerve conduction studies, if performed, are normal, or indicate involvement of sensory nerves only **AND**
- Brain magnetic resonance imaging (MRI) normal, or if abnormal, absence of brainstem lesions consistent with encephalitis **AND**

An alternative diagnosis is not evident (including, but not limited to Wernicke's encephalopathy, botulism, diphtheria)

**While the classic triad is often clinically recognized and occurs in the absence of limb weakness, in some cases there is clinical overlap with GBS, with limb weakness present.

These are the criteria that provide the highest level of diagnostic certainty for GBS and Fisher syndrome, but the diagnosis can still be made if not all the criteria are met so if there is any uncertainty please report all suspected cases.

For further clarification we refer to the Brighton Collaboration document
http://www.brightoncollaboration.org/intranet/en/tools/public_tools/intranet_login.html

Analysis

Between the 1st September 2009 and the 12th of March 2010 there have been 62 notifications.

The following results are preliminary and are pending confirmation by the HPA:

- 36 questionnaires have not yet been returned. 26 questionnaires have been returned of which 15 meet the case definition, five await classification, there are two “no cases” and four duplications.

- Of the 15 meeting the case definition, 14 had Guillain-Barré syndrome and one had Fisher syndrome. In 13 cases there was a suspected infection in the previous three months (one H1N1, six gastroenterological, five URTI, one other). In two cases there was a reported vaccination in the previous three months (one Baxter H1N1, one HPV)

Case reports are higher than those seen in the previous BPSU study of acute flaccid paralysis (AFP) where just 20 cases of GBS were identified per year.[3]

Discussion

The plan is to perform active surveillance via the BPSU for two years. We have already identified more GBS/FS cases than would have been predicted on the basis of the BPSU AFP study performed from 1991-4. Professor Miller and her colleagues in the HPA are working with us and the British Neurological Surveillance Unit to identify GBS cases in both children and adults. The hope is that this combined approach will generate a sufficient number of cases to determine whether or not there is a significantly increased risk of developing GBS after vaccination against H1N1.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

English Department of Health. Policy Research Programme - (Ref No 0190047).

Ethics approval

Trent Research Ethics Committee, (Ref:09/H0405/45 and National Information Governance Board reference number (Ref:ECC/BPSU 5-02 (FT1).

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HIV/AIDS

Key points

- More than 1300 children born in 2008 to women diagnosed with HIV by the time of delivery have been reported.
- Since 2000 the overall mother to child transmission rate from diagnosed women has been about 1%.
- The majority of recently diagnosed infected children were born abroad; there is a non-significant trend towards these children being tested following the diagnosis of a family member.

Summary

National surveillance of paediatric HIV infection began in 1986 and is based on complementary paediatric, obstetric and laboratory reporting schemes. Reporting is voluntary and confidential and data from all sources are combined as the National Study of HIV in Pregnancy and Childhood (NSHPC) at the UCL Institute of Child Health (www.nshpc.ucl.ac.uk).

Most children currently living with HIV in the UK and Ireland, whether born here or abroad, acquired their infection through mother-to-child transmission. Combining NSHPC with unlinked anonymous survey data shows that in the UK the number of exposed infants increased substantially from about 300 in 1997 to over 1300 in 2007 (www.hpa.org.uk, and NSHPC data). Antiretroviral treatment, appropriate mode of delivery (elective caesarean section, or planned vaginal delivery, depending on the circumstances) and the avoidance of breastfeeding reduce transmission rates in diagnosed women to around 1% in comparison with a likely transmission rate of about 25% without interventions.[2] Women must be diagnosed in time to be able to access these interventions, and antenatal HIV testing has been routinely recommended to all pregnant women in England and Ireland since 2000 and throughout the rest of the UK subsequently. The proportion of women diagnosed before delivery in the UK increased from an estimated 32% in 1997 to over 90% since 2004, and remains high (www.hpa.org.uk).

Children with confirmed HIV infection (Figure 11) who were either born abroad or were born to undiagnosed women in the UK/Ireland are generally diagnosed when they present with symptoms or because a member of their family is diagnosed with HIV infection. The majority of recently diagnosed children were born abroad.

Dr Pat Tookey and team

Objectives

The surveillance of paediatric HIV infection and AIDS in the United Kingdom and Ireland.

Study duration

Surveillance period: Surveillance began in June 1986 and is regularly reviewed.
Follow-up: Cases are followed up during the first year to establish infection status, and those who are infected remain in long-term follow up through the Collaborative HIV Paediatric Study (CHIPS), a collaboration between the NSHPC, the MRC Clinical Trials Unit, and the clinicians.

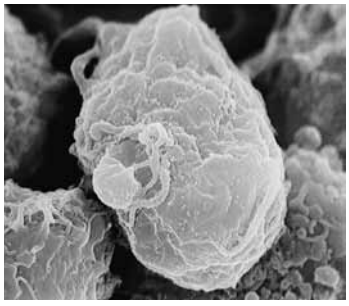
Methodology

Case definition

Any child less than 16 years of age who has AIDS, or has been diagnosed with HIV infection. Any child born to a woman known to be HIV infected at the time of delivery regardless of the child's infection status.

Additional sources of data

Paediatric reports made directly to the NSHPC; pregnancy reports made through a parallel active reporting scheme run under the auspices of the Royal College of Obstetricians and Gynaecologists; laboratory reports to the Health Protection Agency (HPA) Centre for Infections and Health Protection Scotland (HPS); and in earlier years cases reported through the UK Haemophilia Centre.



C. Goldsmith

Figure 11: Scanning EM of HIV, grown in cultured lymphocytes. Virions are seen as small spheres on the surface of the cell

Table 7: HIV infection and infants born to HIV infected women *(all reporting sources)* Source of report and exposure/likely source of infection *(notified by 31 December 2009)*

Exposure / likely source of infection	BPSU reports	Reports from other sources	Total
Children born to HIV infected women	5827	7095	12922*
Likely source of infection for other infected children			
Haemophilia treatment	48	219	267
Blood transfusion/products	38	22	60
Other/not yet established	31	45	76
Total	5944	7381	13325

*1851 known to be infected

Analysis

Number and geographical distribution of reports: By the end of December 2009 there had been 7758 BPSU reports, of which 5896 were confirmed cases of HIV infection or exposed infants at risk of vertical transmission, 809 were duplicates and 663 reporting errors; the remaining 390 reports were still being investigated. A further 7429 confirmed cases were reported through other sources. Table 7 shows the likely source of infection or exposure risk for all confirmed cases.

The majority of reports (85%) were made between 2000 and 2009 and this pattern was similar for all regions (Table 8). In England before 2000, only 29% of reports were received from outside London compared with 47% of reports made between 2000 and 2009.

Children born to infected women: Most reported children (12922/13325, 97%) were born to infected women. By the end of 2009, 1851 (14%) of these children were known to be infected, and 9280 (72%) uninfected; infection status for the remaining 1791 (14%) had not yet been reported, but the majority were recent reports and very few are likely to be infected. While less than 8% were born abroad, they accounted for nearly half (49%) of all confirmed mother-to-child transmissions.

Since 2005 there have been over 1,200 births each year to diagnosed women in the UK and Ireland, (reports for 2009 will increase substantially) (Table 9). Although the infection status of some of these children has yet to be reported, most will be uninfected. The overall transmission rate for births to diagnosed women between 2000 and 2006 was 1.2% (61/5151, 95% CI: 0.9-1.5%), and 0.8% (40/4864) for women who received at least two weeks of antiretroviral therapy prior to delivery.[2]

Table 8: HIV infection and infants born to HIV infected women (all reporting sources) Region and time period report *(notified by 31 December 2009)*

Region of first report	1986-1999	2000-2009	Total
England Total	1575	9699	11274
London	*1122*	*5121*	*6243*
North	*181*	*1418*	*1599*
Midlands & East	*128*	*1948*	*2076*
South	*144*	*1212*	*1356*
Wales	26	133	159
Northern Ireland	4	56	60
Scotland	232	347	579
Ireland	170	1083	1253
Total	2007	13318	13325

Table 9: Year of birth and infection status of children born in the UK and Ireland to women diagnosed by the time of delivery *(notified by 31 December 2009)*

Year of Birth	Infected	Indeterminate	Not infected	Total
1984-1999	111	146	896	1153
2000-2001	15	95	828	939
2002-2003	20	115	1599	1734
2004-2005	25	121	2180	2326
2006-2007	18	342	2324	2684
2008*	8	356	946	1310
2009*	3	545	261	809
Total	200	1720	9035	10955

*reports for 2009 expected to rise substantially

Infected children: Since surveillance started in 1986, 2252 infected children have been reported: 352 (16%) are known to have died, 102 (5%) to have gone abroad and 223 (10%) to have transferred to adult services: a further 98 (4%) are either reported as lost to follow up or have had no follow up information reported since the end of 2006.

Of the 1193 children diagnosed in the UK and Ireland between 2000 and 2009, 62% were born abroad, the majority (92%) in sub-Saharan Africa. At least 10% of these children were known to be HIV-infected before arrival in the UK/Ireland and date of arrival was available for 72% of the remainder (482): two-thirds (320) were diagnosed within a year of arrival but at least 15% (72) had lived in the UK/Ireland for three years or more before being diagnosed with HIV infection. Most children were tested either because a family member had been diagnosed with HIV (rising from 39% in 2000 to 60% in 2008 *p=0.07*) or because they presented with symptoms (declined from 58% in 2000 to 33% in 2008 *p=0.09).*

Of the 919 children known to have acquired infection from their mothers in the UK or Ireland, most (78%) were born to women who had not been diagnosed by the time of delivery; 217 infants born since 2002 (143 to undiagnosed and 74 to diagnosed women) were confirmed infected by the end of 2009.

Discussion

The number of births to HIV infected women in the UK and Ireland has increased substantially each year since 2000, with reported births exceeding 1200 since 2005.[1] Most of these infants were born to diagnosed women who were able to take advantage of interventions to reduce the risk of transmission and are themselves uninfected. Overall mother-to-child transmission rates in diagnosed women in the UK and Ireland are now at around 1% with even lower rates among women who received appropriate treatment according to the British HIV Association guidelines (www.bhiva.org.uk).[2] However, despite high uptake of antenatal testing and interventions, some infants are still acquiring HIV infection from their mothers.

Nearly two-thirds of infected children diagnosed between 2000 and 2009 in the UK or Ireland were born abroad, mostly in sub-Saharan Africa. There are concerns among clinicians that infected children may not be diagnosed quickly enough to benefit fully from highly active antiretroviral therapy (HAART). Our data suggest that many children who were born abroad are either already known to be HIV-infected when they arrive in the UK or Ireland, or are diagnosed within a year of arrival. However, while there has been a non-significant trend towards children being tested for HIV following the diagnosis of another family member many remain untested until they become symptomatic. It will be important to continue to monitor why children are tested for HIV infection following the publication of the 2009 report 'Don't Forget the Children' which provides guidance for testing the children of HIV-positive parents.[3]

Reports to the NSHPC from all areas of the UK, and from Ireland have increased in recent years.[1] The wide geographical distribution of the newly reported cases highlights the valuable role of the BPSU in identifying infected children diagnosed outside the specialist paediatric HIV centres, as well as exposed infants born to infected women in lower prevalence areas.

Please note the data presented are provisional, not peer reviewed and definitive conclusions should not be drawn from them.

Funding

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Ethics approval

The London Multicentre Research Ethics Committee reviewed and approved the NSHPC and the associated CHIPS study on 28 January 2004 (Refs: London MREC/04/2/009; MREC/04/2/010). Paediatric surveillance of HIV through the BPSU also has PIAG approval (Ref: PIAG/BPSU 2-10(a/2005).

Support groups

1. S.O.F.A.H. (Services Organised for Families Affected by HIV/AIDS), 4th Floor, King Edward Building, 205 Corporation Street, Birmingham, B4 6SE.
   Web: http://www.barnardos.org.uk/sofah.htm
2. Positively Women, 347-349 City Road, London, EC1V 1LR.
   Web: http://www.positivelywomen.org.uk
3. Body and Soul, 99-119 Rosebery Avenue, London, EC1R 4RE.
   Web: http://www.bodyandsoulcharity.org

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Hypernatraemia

Key points

- Hypernatraemia is a condition that can occur because of difficulty in establishing feedng in newborn babies.
- This study was undertaken to identify incidence. In the first 11 months of surveillance, there were 21 confirmed cases of hypernatraemia.
- Median age at presentation was seven days.
- At presentation, median weight loss was 19% of birthweight.

Summary

Hypernatraemia (high body salt levels) occurs for a variety of reasons, but has often been reported to occur because of difficulty establishing feeding in newborn babies. We are collecting cases of the serious end of this disease spectrum to work out how commonly it occurs, what kind of babies and mothers are affected, and what happens when the problem becomes apparent clinically.

We are not only collecting those cases where feeding was thought to be the problem, although we are aiming to exclude those cases where a urinary concentrating problem caused hypernatraemia.

Case reports in the literature suggest a significant associated morbidity with this condition – we are collecting data on this, as well as on weight loss, urinary biochemistry and rate of fall of blood sodium.

Should the results will give data on how much of a problem such severe hypernatraemia really is, and this in term may help to either prevent, or at least facilitate early detection of this important problem. Importantly a recent paper from the Netherlands reported on hypernatraemia, so some international comparisons should be possible.

Objectives

The study aims to describe the:

- incidence of severe hypernatraemia in the neonatal period, and the associated mortality rate
- age at presentation, clinical features and extent of weight loss at presentation and associated morbidity
- approaches taken to treatment of severe hypernatraemia, and the early responses of babies to the treatment
- timing of neurological sequelae and co-morbidities.

Dr Sam Oddie

Study duration

Surveillance period: May 2009 – May 2010 (inclusive).

Methodology

Case definition

Severe hypernatraemia (i.e. serum sodium ≥160mmol/l) in an infant less than 28 days of age, who was born at >33 weeks gestation. Infants with a known urinary concentrating problem should be excluded (see below). If you are unsure whether to exclude on basis of a urinary concentrating defect, please report the case.

Excluding:
Infants with a urinary concentrating defect. This will be a clinical judgment based on history, age at presentation, and in some cases expert advice from a paediatric nephrologist. Measured or calculated urine osmolality will enable clinicians to exclude urinary concentrating defects.

Analysis

In the first 11 months of surveillance until 1st March, 59 cases were notified to the study team. Of the first 30 reports, 21 resulted in a confirmed case, with no duplicate reports. No cases to date have been managed in more than one hospital. Relatively few cases have been associated with severe neurological derangement at presentation or during treatment.

Cases have typically experienced significant weight loss in early life. Median weight loss of cases was 19% and median age at presentation was seven days of age. In only one baby was formula feeding the plan prior to presentation. Two of 21 cases had received any formula prior to presentation.

Symptoms or signs noted at presentation typically included weight loss with or without concerns about poor feeding or neurological signs. A few babies were noted to be jaundiced.

Associated co-morbidity has not been commonly reported.

Discussion

We have shown that BPSU surveillance for this kind of problem can successfully ascertain cases, and obtain useful data on a condition that can cause significant morbidity in the neonatal period.

Our data will compare interestingly with that collected by the Dutch paediatric surveillance unit, and may allow conclusions to be drawn concerning the relative frequency with which hypernatraemia occurs in two strikingly different health environments.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

Bradford Teaching Hospitals.

Ethics approval

Bradford REC (Ref: 08/H1302/129) NIGB Section 251 Support (ECC/BPSU 1-06(FT1)/2009).

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Idiopathic Intracranial Hypertension

Key points

- Among the 374 notifications received over 25 months (from July 2007 to July 2009) of surveillance, there were 66 confirmed and 67 probable cases of childhood idiopathic intracranial hypertension (IIH) identified.
- Of the 133 confirmed/probable cases of IIH, 65% were female, there was no difference between the sexes in their median age at diagnosis (12 years) and 58% were obese.
- The provisional national annual incidence of IIH in children of age 1 to 16 years is 0.5 per 100,000 population.

Summary

Idiopathic intracranial hypertension (IIH), previously known as pseudotumour cerebri or benign intracranial hypertension, is the rare condition of intracranial hypertension without identifiable pathology. In adulthood, IIH is most common in obese young women, however in childhood both genders have been reported to be equally affected. The clinical definition and association of this unique condition have evolved with time and the advances in neuroimaging making both the diagnosis and management challenging. Despite intervention, the clinical course of IIH can be prolonged and recurring with potential complications of distressing headache and treatment procedures, as well as blindness. The overall annual incidence of IIH (including child and adult cases) has previously been estimated to be 1-3 per 100,000 population, however epidemiological data on childhood IIH are lacking and limited to hospital-based retrospective case series.[1,2]

The principle objective of this BPSU IIH study is to obtain a contemporary national annual incidence of IIH in childhood, but the study aims are to also report up-to-date clinical information on the varied spectrum of presentation, associated conditions, and the clinical course of headache and visual outcome at one-year after diagnosis. Findings from this study will inform the diagnosis and management of future paediatric IIH cases.

Objectives

The study aims to determine the:

- annual incidence of IIH in children aged 1 to 16 years in the UK and Ireland
- spectrum of clinical presentation of IIH in children by age

Dr Yim-Yee Matthews

- national incidence of various established associations of IIH in children, in particular obesity at presentation
- frequency and spectrum of visual disturbances in children presenting with IIH
- current clinical management of children with IIH
- clinical course of headache and spectrum of the visual outcome one-year post diagnosis following various treatment modalities.

Study duration

Surveillance period: July 2007 to July 2009 (inclusive).
Follow up period: July 2008 to July 2010.

Methodology

Case definition

Any newly presenting child aged 1 to 16 years (not including 17th birthday) seen in the past month who fulfils at least two of the key features and all of the three essential criteria.

At least TWO Key Features:

- Symptoms of raised intracranial pressure (such as headache, nausea, vomiting or irritability) and/or visual symptoms of diplopia, blurring vision or transient visual loss
- Papilloedema, unilateral or bilateral
- Raised opening cerebrospinal fluid pressure above 20 cm by lumbar puncture

AND all THREE Essential Criteria:

- Normal level of consciousness
- Cranial imaging (including CT or MRI and MR or CT venography) does not reveal a structural cause such as ventricular dilatation, cerebral mass, vascular lesion or sinus venous thrombosis*, to explain the presenting symptoms or signs of raised intracranial pressure
- Normal cerebrospinal fluid contents (for atraumatic tap, white cell count < 6 x 106 /L, protein < 0.4 g/L, ratio of cerebrospinal fluid glucose to blood glucose > 0.5 or cerebrospinal fluid glucose > 2.1 mmol/l).

Table 10: Regional distributions of the IIH notifications

	Total Reports	Confirmed/ Probable	Duplicate	Error	Unable to follow up	Awaiting ascertainment	Awaiting reply
England	314	116	33	52	26	19	68
Scotland	16	4	1	3	3	0	5
Wales	27	8	3	4	2	4	6
NI	6	2	0	2	0	1	1
ROI	11	3	2	4	2	0	0
Total	**374**	**133**	**39**	**65**	**33**	**24**	**80**

Excluding

• Sinus venous thrombosis whose neuroimaging appearances can be difficult to distinguish from venous obstruction related to raised intracranial pressure. We have asked reporting paediatricians to report if in doubt or if case was excluded due to sinus venous thrombosis.

Analysis

A total of 374 notifications were received over 25 months of surveillance (July 2007 to July 2009) and their distribution by country are as shown in Table 10. Among these, 67 were confirmed IIH cases and 66 were probable cases (clinical diagnosis without MR/CT venography or missing some cerebrospinal data). Two cases of venous sinus thrombosis, two cases of optic nerve head Drusen and one case of optic neuritis were notified during this study period and all were excluded from analysis. There were 39 duplicates, 65 cases reported in error (either diagnosed outside the surveillance period or not meeting the case definition) and 33 cases that could not be followed up. A further 24 notified cases are awaiting expert review by the investigators team and the remaining 80 cases are pending return of a completed questionnaire or clarification of incomplete data.

Of the 133 confirmed/probable IIH cases, 87 cases (65%) were female. The median age at diagnosis was 12 years in both girls (interquartile range [IQR] 10.5 to 14) and boys (IQR 9 to 13). There were no children under the age of three years diagnosed with IIH during the surveillance period and the majority of reported cases were over 10 years. Figure 12 shows the distribution of age and sex.

Although height measurement was not available for 14 cases, body mass index (BMI) could be calculated for the remaining 119 children. Of these, 69 (58%) children were obese (BMI ≥ 98th centile).

*Clinical presentation and management:*Table 11 summarises the frequency of different clinical presentations. Four IIH cases were found to have co-existent optic nerve head Drusen.

The number of therapeutic lumbar punctures varied from 1 to 14. Seven (5%) out of twenty-one cases (16%) who underwent a neurosurgical review had lumboperitoneal shunting. In addition one child required bilateral optic fenestration following lumboperitoneal shunting.

At the time of presentation, 18 children were receiving antibiotics.

Discussion

Although 104 cases are still awaiting expert review or questionnaires to be returned, over 25 months of surveillance, we have identified 133 confirmed and probable IIH cases. The follow up data collection at one-year post diagnosis will continue until the end of July 2010.

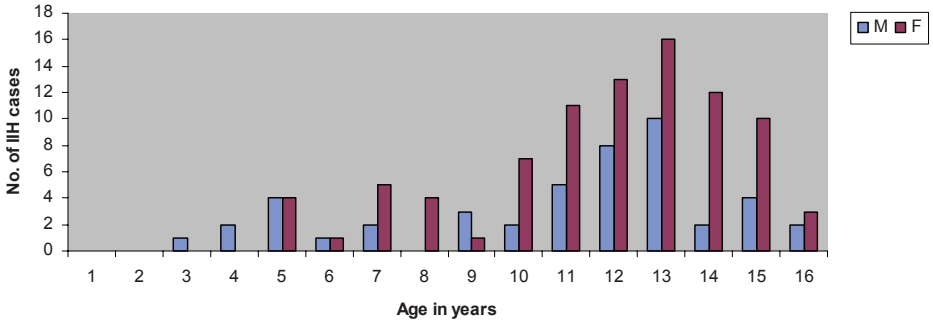

Figure 12: Age and sex of 133 confirmed/probable IIH cases

Table 11: Summary of clinical presentations and management of 133 confirmed/probable IIH cases

	N	%
At presentations		
Headache	115	86
Papilloedema (unilateral or bilateral)	119	89
Visual deficits (including visual acuity, visual fields or both)	33	25

Among 133 confirmed/probable IIH cases, 87 (65%) were female. The median age at diagnosis was 12 years for both boys and girls. Of 119 IIH cases for whom both height and weight were reported, 69 (58%) were obese (BMI ≥ 98th centile).

The preliminary national annual incidence of IIH in children age 1 to 16 years was estimated as 0.5 per 100,000 child population. Compare to previous retrospective epidemiological studies, this preliminary annual incidence of childhood IIH is 1.8 times lower than the Canadian report[1] which diagnosed cases from 1979 to 1994, but five times higher than the Northern Ireland report[2] in 1991 to 1995. The differences in incidence may be related design of the BPSU IIH study, but there may also be changes in gender ratio, age distribution and obesity within the child population.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

Sir Peter Tizard Bursary.

Ethics approval

East London and the City Research Ethics Committee (Ref: 07/Q0603/47).PIAG Section 60 Support [PIAG/BPSU 1-05(FT3)/2007].

Support Groups

1. The Association for Spinal Bifida and Hydrocephalus, 42 Park Road, Peterborough, PE1 2UQ.
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Acknowledgements

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Intussusception in children aged less than 12 months

Key points

- Intussusception is a condition in which one portion of the bowel telescopes within another causing obstruction. It is a life-threatening surgical emergency which mainly affects children during the first year of life.
- An increase in intussusception was seen following the administration of an early vaccine against rotavirus diarrhoea (the commonest cause of vomiting and diarrhoea in early life and a major international cause of death).
- This has been the first joint collaborative study undertaken with the British Association of Paediatric Surgeons.
- The combined annual incidence of intussusception among UK and Irish infants was 29.1 cases per 100,000 live births.
- The study provides current, national baseline data on the incidence of intussusception, which can be used to evaluate any changes in incidence following the introduction of new rotavirus vaccines.

Summary

Intussusception (IS) is a condition in which one portion of the bowel telescopes within another causing obstruction. It is a life-threatening surgical emergency which mainly affects children during the first year of life. An increase in intussusception was seen following the administration of an early oral rotavirus vaccine (RotaShield®; Wyeth Vaccines) in the United States. Rota virus diarrhoea is the commonest cause of vomiting and diarrhoea in early life and a major cause of deaths worldwide. The vaccine was withdrawn from clinical practice shortly after its introduction in 1998.

Availability of IS data at national level is becoming a high priority due to the development of new rotavirus vaccines. Presently, two new rotavirus vaccines have received European approval (Rotarix®; GSK Vaccines and Rotateq®, Sanofi Pasteur) and are also being considered by the Joint Committee on Vaccination and Immunisation (JCVI) for infant immunisation in the UK.

The risk of IS has been a prime consideration throughout the development of these new rotavirus vaccines, which have shown high efficacy and so far, no such increased risk[1,2], but safety can only be confirmed through ongoing careful surveillance. Globally, baseline studies of intussusception have been undertaken to allow assessment of any change in IS incidence following introduction of the new rotavirus vaccines.

Figure 13: Intussusception identified at laparotomy

Prof Brent Taylor

Intussusception identified at laparotomy.

Objectives

The study aims to:

- estimate the pre-vaccine incidence of IS in children aged less than 12 months.
- describe the epidemiology of IS, including effects of:
  - Age, gender, and ethnic group
  - Seasonality
  - Management strategies, and
  - Outcomes

Study duration

Surveillance period: March 2008 – March 2009 (inclusive).
Follow-up: One year outcome follow-up data sought to March 2010.

Methodology

Case definition

Any child under 12 months of age, who in the opinion of the notifying paediatrician / surgeon, had suspected or confirmed intussusception based on clinical, radiological and/or surgical findings. Reported cases were classified by the investigators as definite, probable, possible, or suspected intussusception cases according to the internationally agreed and validated Brighton Collaboration criteria.[3]

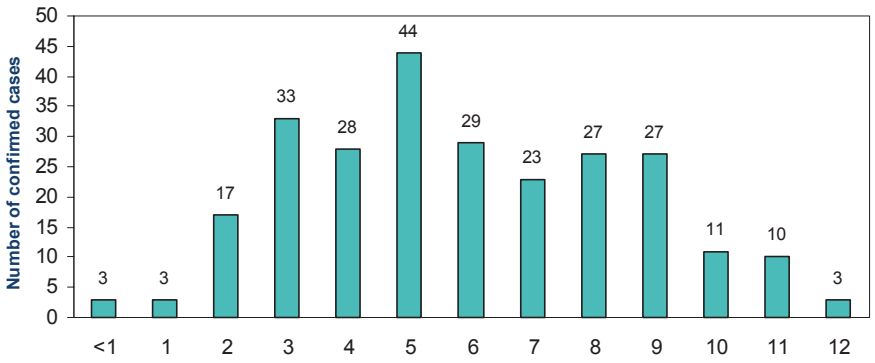

Figure 14: Confirmed cases - according to age

Additional sources of data

Active card surveillance was also undertaken through the British Association of Paediatric Surgeons.

Analysis

Of 392 eligible case notifications (and after excluding 105 duplicate cases and 15 non-responders) there were 272 intussusception cases (259 confirmed, no 'probable', four 'possible' cases).

The response rate based on questionnaire completion was 95.4% (374 questionnaires received/392 case notifications). Among paediatricians, the response rate was 89.8% (123/137) and 98.4% (251/255) for paediatric surgeons. The rate for surgeons was primarily a result of several techniques employed by the study investigators, since this specialty group was new to the BPSU system.

The annual incidence of IS was 29.2/100,000 live births in the UK and 28.7/100,000 live births in the Republic of Ireland. Two-thirds of confirmed cases were boys and the median age was 6 months (Figure 14). The majority of infants were of white British ethnic group (Figure 15); a peak in incidence occurred in spring and winter.

Abdominal ultrasound was used for diagnosis in a majority of patients (n=243, 94%) and showed a sensitivity of 98% (237/243 patients detected). Enema reduction was the first line of treatment in most cases (238/258, 92%). 92.2% (238/258 confirmed cases) fully recovered, 7.4% (19/258) had minor post-operative complications and there was one (0.4%) child death.

Discussion

While the incidence of IS compares with figures obtained from other developed countries (within the same age group) such as Switzerland, Germany and United States, there may be some degree of under-ascertainment if incidence is based on BPSU alone. We therefore aim to validate our findings by comparing our BPSU results with an additional (retrospective) data source – Hospital Episodes Statistics (HES) data.

As this study included a new group of specialists (paediatric surgeons) who had not previously reported to the BPSU, several steps were taken to ensure a high response rate. In some surgical units, a 'study-lead' was nominated to co-ordinate responses and identify missed cases. The study-lead was either a consultant or trainee (registrar/SHO) who represented his/her hospital and was the key point of contact between the hospital and study investigators. Key members of the study

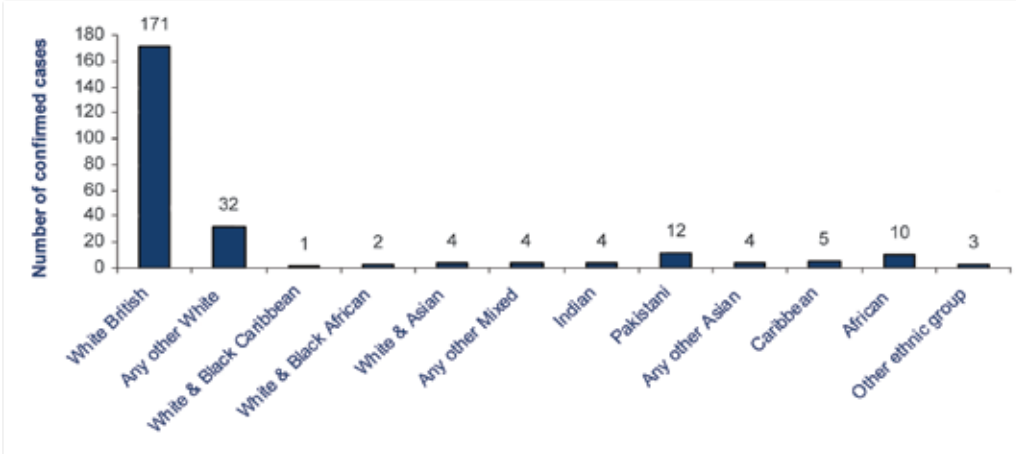

Figure 15: Confirmed according to ethnic groups

team also visited some units with low reporting rates to provide information about the study. These methods involved greater resource use and an increased the workload for the study team but led to a high response rate from surgeons (98%).

Please note that data presented in this report are provisional and have not yet been peer-reviewed; therefore, definitive conclusions should not be drawn.

Ethics approval

Wandsworth Research Ethics Committee (Ref: 07/Q0803/62) and PIAG (2-5(FT1)/2007).

Acknowledgements

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Progressive Intellectual and Neurological Deterioration in Children (Including Creutzfeldt - Jakob disease)

Key points

- Continuing surveillance of UK children with progressive intellectual and neurological deterioration (PIND) is important to ensure that new cases of variant Creutzfeldt-Jakob disease (vCJD) are not being missed among the numerous rare neurodegenerative childhood disorders.
- Surveillance commenced in May 1997 and further active surveillance is planned until April 2012. 2862 children have been notified to date. 1928 cases have been discussed by the Expert Group of eight paediatric neurologists and one geneticist. There have been 1189 children with a known diagnosis other than vCJD, and in the diagnosed group there are over 120 different neurodegenerative disorders.
- Six cases of variant Creutzfeldt-Jakob disease have been reported to the study since December 1998. Of these four have been classified as "definite" and two "probable" according to the National Creutzfeldt-Jakob Disease Surveillance Unit criteria. All have now died.
- Even if you have made a diagnosis we still want to hear about all children with progressive intellectual and neurological deterioration.

Summary

Active prospective surveillance of UK children with progressive intellectual and neurological deterioration (PIND) commenced in May 1997. Funded by the Department of Health (England) [121/6443], it is being carried out via the British Paediatric Surveillance Unit (BPSU) in conjunction with the National Creutzfeldt-Jakob Disease Surveillance Unit in Edinburgh (NCJDSU) and the Health Protection Agency (HPA).

The main aim is to determine whether or not any children in the UK have developed variant Creutzfeldt-Jakob disease (vCJD). This disease was initially reported by Will et al in 1996 (Figure 16). vCJD has been described in patients as young as 12 years of age[1] and it could occur in younger children. It is possible that the clinical presentation of vCJD in young children might differ from that described in adults. The strategy is to detect suspected vCJD cases by looking at a broader group of conditions causing progressive

The PIND Expert Group

intellectual and neurological deterioration (PIND) in children. It is only by carefully examining the clinical details in all these PIND cases that we can be reasonably sure that vCJD is not being missed among the numerous rare neurodegenerative disorders that affect children. This unique dataset provides the opportunity to detect vCJD cases and highlight the variety of PIND conditions in the UK. [2]

Objectives

The study aims to:

- carry out active prospective surveillance of UK children with paediatric neurological conditions (including those with specific diagnoses) defined by their common presentation – progressive intellectual and neurological deterioration (PIND) - to determine the incidence and distribution of the diseases causing PIND.
- evaluate cases presenting with PIND in order to classify them by diagnosis and investigate the possibility that vCJD is occurring in children.

Study duration

Surveillance period: May 1997 - April 2012.
Follow-up: Regularly until case status determined.

Methodology

Paediatricians reporting a child with PIND are sent an initial contact form then contacted by the research nurse or research co-ordinator to arrange a detailed telephone discussion to gather further information about the case. Alternatively the surveillance team may arrange a visit to the reporting paediatrician to review the case notes or send a postal questionnaire. An Expert Group,

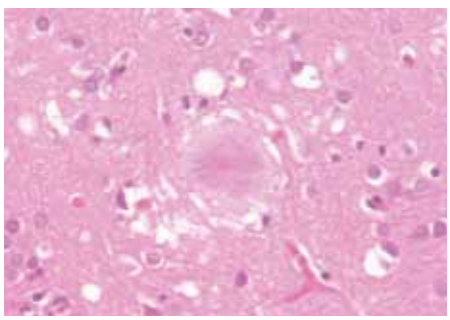

Figure 16: Florid plaque in vCJD x 400 haematoxylin/ eosin stain

comprising eight paediatric neurologists and one geneticist together with a representative from the NCJDSU, meets quarterly in London to review the anonymised clinical information and classify all PIND cases. If a child with clinical features suggestive of vCJD is identified, the referring paediatrician is made aware of this and, if the child's parents agree, the child with suspected vCJD will be notified to the NCJDSU.

Case definition

Any child under 16 years of age at onset of symptoms who fulfils all of the following three criteria:

- Progressive deterioration for more than three months

With

- Loss of already attained intellectual/ developmental abilities

And

- Development of abnormal neurological signs.

Excluding: Static intellectual loss, e.g. after encephalitis, head injury or near drowning.

Including:

- Children who meet the case definition even if specific neurological diagnoses have been made.
- Metabolic disorders leading to neurological deterioration.
- Seizure disorders if associated with progressive deterioration.
- Children that have been diagnosed as having neurodegenerative conditions but who have not yet developed symptoms.

Analysis

By the beginning of March 2010, a total of 2862 children had been notified (Figure 17). One hundred and sixty eight cases are still "under investigation" by their paediatricians. 1144 are "No Cases" (not meeting PIND definition, duplicate notifications, reported in error, no traceable clinical information) and 206 cases are outstanding. The rest were classified as follows:

Definite and probable cases of vCJD: Six cases of vCJD (four definite and two probable) have been notified - the youngest was a girl aged 12 years at onset. The other five were three girls (two aged 14 years and one aged 13 years at age of onset) and two boys aged 15 years at onset.

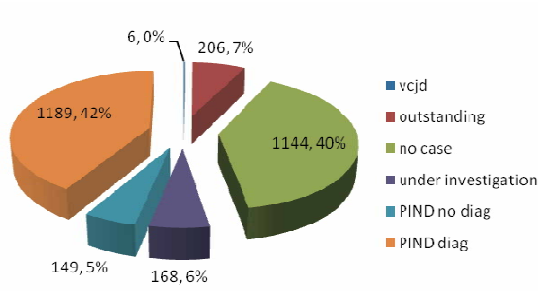

Figure 17: PIND study - current status March 2010

The last child to present developed symptoms in 2000. All have now died and neuropathology has confirmed vCJD in four cases; a post mortem was not carried out on the remaining two cases.

Children with PIND who have definite diagnoses other than vCJD: The study is producing unique national population-based data on the causes of PIND. The majority of children with PIND have a confirmed or likely underlying diagnosis that is not vCJD. In the 1189 children with a confirmed diagnosis there were over 120 different neurodegenerative conditions. The five most commonly occurring diagnostic groups are shown in Figure 18. They are the neuronal ceroid lipofuscinoses (NCLs) (155 cases), the mitochondrial cytopathies (135 cases), the gangliosidoses (109 cases), the mucopolysaccharidoses (102 cases), and peroxisomal disorders (75 cases).

Children with PIND and no underlying diagnosis (idiopathic group): The Expert Group meet regularly to discuss this group of (currently) 149 children. This group gives cause for concern because if a "new" variant of vCJD should arise or if the paediatric presentation should differ from the adult presentation the idiopathic group could possibly include such a phenotype. However, the Expert Group are satisfied that all children have been fully investigated or had a sibling with similar disease pattern who has undergone extensive investigations. There is currently no evidence of a "new" unrecognised disorder in this group.

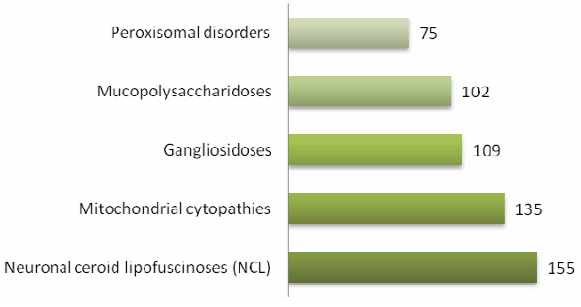

Figure 18: Five most commonly reported PIND diagnostic groups

Discussion

PIND surveillance has continued for almost thirteen years now. Six cases of vCJD in children under 16 years of age at first presentation have been notified to the study. There were four cases of definite vCJD and two cases of probable vCJD. One girl was age 12 years at onset, the youngest ever reported case of vCJD. There have been no other children with the clinical features of vCJD, particularly within the group of children with idiopathic PIND. However there remains concern that more childhood cases may appear, perhaps related to underlying genotype.[3] Surveillance is essential as there are still many unanswered questions about this relatively new disorder – for example, the number of children who may be incubating vCJD, the length of the incubation period and the exact nature of transmission.

Please note the data presented are provisional, not peer reviewed and definitive conclusions should not be drawn from them.

Funding

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Ethics approval

Cambridgeshire2 Research Ethics Committee, (Ref: 97/010), the Public Health Laboratory Service Ethics Committee and the Patient Information Advisory Group (PIAG/BPSU 2-10(c) 2005).

Support Groups

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2. Batten Disease Family Association, c/o Heather House, Heather Drive, Tadley, Hampshire, RG26 4QR. Web: http://www.bdfa-uk.org.uk
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Also thanks to Professor M. van der Knaap for reviewing the PIND unclassified leucoencephalopathy group and for her excellent opinion on the MRI scans performed on these children.

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Sudden Unexpected Postnatal Collapse

Key points

- Sudden unexpected collapse of a healthy term infant in the early postnatal period is a rare and devastating scenario in which 50% of infants die and the majority of survivors suffer severe neurological damage.
- Surveillance into 'Sudden Unexpected Postnatal Collapse' commenced in November 2008 and completed in November 2009.
- 91 cases were referred of which 44 so far are confirmed cases of sudden unexpected postnatal collapse.

Summary

Sudden unexpected collapse of a healthy term infant in the early postnatal period is a rare and devastating scenario in which 50% of infants die and the majority of survivors suffer severe neurological damage. Although well recognised in individual centres, these infants fail to register nationally, a missing group of 'mortality and morbidity' who are currently under-investigated. A preliminary survey in the United Kingdom has shown that there is no consistent approach to investigation among clinicians and many cases remain unexplained.

This was the first national study which aimed to describe the incidence, presenting features, investigation and outcome of such infants. Consultant paediatricians were asked to report all cases of sudden unexpected postnatal collapse every month and provide demographic and clinical data, including outcome at one year of age.

The study expects to demonstrate the widely disparate approach to investigation of these infants and thus highlight the need for a consensus. This study will raise the profile of this group and help to establish guidelines for the optimal early postnatal care of all infants.

Objectives

The study aims to:

- estimate the incidence of sudden early postnatal collapse in apparently healthy term infants
- describe the clinical presentation and associated factors of infants undergoing sudden early postnatal collapse

Dr Julie-Clare Becher

- describe current management of such infants including investigations
- determine the outcome at discharge from hospital and at one year.

Study duration

Surveillance period: November 2008- November 2009 (inclusive).
Follow-up: One year outcome data sought to November 2010.

Methodology

Case definition

Infants ≥ 37 completed weeks of gestation with a 5 minute Apgar score of ≥ 8 who have a sudden and unexpected collapse in hospital ≥ 12 hours of birth requiring resuscitation and who either die or go on to require intensive care.

'Resuscitation'- positive pressure ventilation by bag and mask or endotracheal tube,
'Intensive care'- requiring positive pressure ventilatory support following admission

Excluding:

1. Infants < 37 weeks
2. Infants with 5 min Apgar score of < 8
3. Infants who collapse outside of hospital
4. Infants who collapse > 12 hours of age
5. Infants who collapse who survive resuscitation but who do not require intensive care

Additional sources of data

Contact with Information Services Division – Scotland, Northern Ireland Statistics Research Agency, Confidential Enquiry into Maternal and Child Health and Central Statistics Office - Ireland is underway to ensure case ascertainment and case de-duplication.

Analysis

There were a total of 91 cases referred to the BPSU over the 13 month period November 2008 to November 2009.

Of these nine were duplicate cases, 29 did not fit the study criteria and in eight cases data have not yet been secured. In one case there were no data available. This is a return rate of 90%.

There are currently 44 cases which fit the study criteria for sudden unexpected postnatal collapse. Full data about the mother, birth and the circumstances of collapse have been collected and will be analysed shortly.

Further information will be presented once data analysis commences.

Discussion

Although analysis has not yet commenced, the number of true cases reported is in keeping with our expectations and consistent with the literature. A number of case series estimate the incidence of such collapse in the first four days of life as 0.07-0.5/1000 live births with clustering of cases in the first day of life. As such 15-100 cases were expected during the study period. This UK study shows an incidence of at least 0.05/1000 term live births, or one case in every 20,000 term live births. An average sized neonatal unit is therefore only likely to see such a case every four years.

With such cases presenting rarely and the potential causes multitude, a comprehensive approach is necessary to guide clinicians toward investigations which may be most likely to yield a diagnosis. A diagnosis has important implications for the parents not only in explaining their child's catastrophic deterioration but also in aiding the grieving process where infants die and in providing information for future pregnancies. In those infants who survive, a detailed set of investigations will optimise the chance of finding an explanation for the collapse which may have implications for management and prognosis of the infant.

Please also note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

WellChild

Ethics approval

Tthe London REC (Ref: 08/H0718/47) and has been granted PIAG Section 251 Support (Ref: PIAG 5-06(FT1)/2008).

Support groups

1. Stillborn and neonatal deaths charity (SANDS)
   28 Portland Place, London, W1B 1LY.
   Sands National Helpline: Tel: 020 7436 5881.
   Web: http://www.uk-sands.org
2. Scottish Cot Death Trust. The Scottish Cot Death Trust, Royal Hospital for Sick Children, Yorkhill, Glasgow G3 8SJ. Tel: 0141 357 3946.
   Web:http://www.sidscotland.org.uk
3. Foundation for the Study of Infant Death (FSID).
   11 Belgrave Road, London SW1V 1RB.
   Tel (general enquiries): 020 7802 3200.
   Web: http:// www.fsid.org.uk

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Toxic shock syndrome

Key points

- Toxic shock syndrome (TSS) is a rare toxin related disease with potentially fatal or catastrophic consequences.
- There is little data on the incidence of TSS in children in the UK.
- This BPSU study will inform paediatricians about incidence and management of this potentially fatal condition.
- For the first time BPSU surveillance will ascertain cases from burns units.

Summary

Staphylococcal toxic shock syndrome (TSS) was first described in children in 1978 and was later described in association with tampon use in young women. Subsequently burns have been recognised as a significant factor predisposing to TSS, but may be over-reported as part of burns sepsis.

In the 1980s streptococcal toxic shock syndrome was first described and has subsequently been noted to have a more variable presentation. It has previously been reported much less frequently than staphylococcal TSS and may be clinically indistinguishable from it. Other bacteria such as clostridium have variant syndromes associated with toxin production which are even less common and a neonatal variant called neonatal toxic shock syndrome−like exanthematous disease (NTED) has also been described.

Many staphylococci have the genes for toxin production but only express these under certain conditions. It is not clear what triggers toxin production in these organisms but it seems to be multifactorial, dependent on environmental and host features. Several toxins have been identified but none has been linked to clinical symptoms.

TSS is thought to have significant morbidity and mortality rates. However, there is very little reported data on outcome and mortality associated with TSS. A recent European enhanced surveillance study for Streptococcal TSS from the Health Protection Agency reported only eight cases over the course of one year. This low figure is felt to be due to underreporting although there is little firm evidence for this.

There is no clear published recent epidemiological data and so the burden of disease is unknown, although we estimated that there would be fewer than 150 cases in total per year in the UK. It is hoped that this study will add to the understanding of the true incidence of TSS in the UK and clarify both the range of organisms and diverse clinical presentations.

Dr Shazia Adalat

Dr Tom Dawson

Objectives

The study aims to identify:

Primary

- the incidence of TSS due to staphylococcal or streptococcal organisms in children in the UK

Secondary

- the presence of previously described associated factors with the development of toxic shock syndrome in children in the UK
- the different forms of clinical presentation of TSS due to staphylococcal or streptococcal organisms in children in the UK, including relevant laboratory parameters
- the key features of clinical management of TSS due to staphylococcal or streptococcal organisms in children in the UK
- toxins and bacterial type causing TSS due to staphylococcal or streptococcal organisms in children in the UK
- mortality and morbidity rates caused by TSS due to staphylococcal or streptococcal organisms in children in the UK.

Study duration

Surveillance period: November 2008-November 2009 (inclusive).

Methodology

Case definition - surveillance

Any child under 16 years of age whom the attending paediatrician believes has toxic shock syndrome according to the following criteria:

- Fever
- Hypotension- systolic BP less than the 5th centile for age according to the following chart :
- Involvement of at least 2 other systems

Age (Years	5th Centile Systolic Blood Pressure (mmHg)
0-2	70
2-4	76
4-6	82
6-8	85
8-10	90
10-12	92
12-14	95
14-16	97

(derived from :-
Update on the 1987 Task Force Report on High Blood Pressure in Children and Adolescents. Pediatrics. 1996 Oct; 98(4 Pt 1):649-58.

BP centiles in Great Britain. Jackson LV, Thalange NKS and Cole T J. *Arch. Dis. Child*. 2007; **92:**298-303.)

And either

- Rash (with or without desquamation)

Or

- No rash BUT isolation of Group A streptococcus

Case definition - analytic The definitions used for staphylococcal toxic shock syndrome were those adopted by the Centre for Disease Control and Prevention in the United States and streptococcal toxic shock syndrome was defined by the American Academy of Paediatrics definition (derived from the American working group on Streptococcal Toxic Shock Syndrome). These can be viewed at http://bpsu.inopsu.com/studies/Toxic_Shock_Syndrome/protocol.html

Additional sources of data

Along with a monthly report card being sent to paediatricians a similar card was dispatched to burns units (which are sometimes run by doctors e.g. anaesthetists or surgeons not covered by the mailing to paediatricians) on a monthly basis.

We also liaised with the Health Protection Agency Staphylococcal and Streptococcal reference laboratories for the UK and Republic of Ireland. All cases of staphylococcal and Streptococcal toxin positive isolates in children (<16 years) are kept on a data base. We are using this to cross reference against our data from paediatricians and burns units.

Analysis

Data collection is not yet complete so interim analysis only has been performed. By the end of the surveillance period, we had received 138 reports through the orange card system and direct reports from paediatricians and one direct report from a burns unit. Outstanding responses are awaited for 23 cases.

Seventy responses were excluded. Of these, eight replies were excluded as the case either occurred outside the time frame of study or the children were outside the age range being studied. Thirty-seven cases did not fulfil the criteria for either staphylococcal or streptococcal TSS. There were twenty five duplicate reports.

Thus far there are thirty-one confirmed cases of TSS. There were similar numbers of staphylococcal and streptococcal toxic shock. A further fifteen cases were classified as probable cases of staphylococcal or streptococcal TSS because complete data was not available. Of the 46 confirmed and possible cases of TSS, thirty were female. Only six were not of white Caucasian origin. Age range of confirmed and probable cases was 0.1- 15.8 years (median age 6.1 years). Due to the small numbers, regional breakdown is not informative.

Six cases of either confirmed or probable toxic shock were associated with tampon use. Four cases with varicella have subsequently developed toxic shock.

Invasive ventilatory support was used in 70% of the confirmed and probable cases (n=32). Inotropic support was used in 67% (n=31). 11% (n=5) required haemofiltration.

Although all patients received antibiotics there was wide variation in the antibiotics employed. Clindamycin was prescribed in 65% of cases (n=30) compared to linezolid prescribed in only 4% of cases (n=2). Immunoglobulin was given to 17% (n=8) and fresh frozen plasma to 39% (n=18), of which only one-third had abnormal coagulation on testing.

Five confirmed cases and a further four probable cases of streptococcal TSS died (53%). There were no reported deaths in cases of staphylococcal TSS. Residual morbidity was observed in 24% (n=11).

Discussion

The number of cases being reported is in keeping with anticipated numbers. The ages and ethnic background of cases are in keeping with previous data. In contradiction to previous reports which suggested that staphylococcal TSS is more common, our data suggests that streptococcal TSS is at least as common as staphylococcal TSS.

Burns cases constituted a minor number of cases, compared to previous published reports (four burns cases, only one reported by a burns unit) which suggest the majority of cases would constitute TSS not associated with burns).

The majority of paediatricians had not requested or were not aware if samples for toxin isolation were sent enabling definitive identification of the responsible toxin. We will be cross-referencing cases with those where testing occurred at the HPAs to attempt to match cases.

The majority of cases of TSS required significant multi-system support. Although all patients received antibiotics there was wide variation in the antibiotics employed. Of the proven anti-toxin therapies, clindamycin appeared to be used most often, whilst linezolid was used infrequently. Interestingly as well, immunoglobulin was given less frequently than FFP for which there is no proven role in TSS (even after excluding a role for FFP in those children with abnormal coagulation).

A quarter of reported cases had residual morbidity. Mortality appears to be higher in streptococcal TSS.

Please note that the data presented is provisional and has not yet been peer reviewed and accordingly definitive conclusions should not be drawn.

Funding

Sir Peter Tizard Bursary.

Ethics approval

This study has been approved by the Lewisham MREC (Ref: 08/H0810/16) PIAG Section 251 Support (Ref: PIAG/BPSU 5-07 (FT2)/2008).

Acknowledgements

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5 New Studies 2010

Congenital syphilis in children under 2 years of age

Dr Ian Simms

Summary

Between 2000 and 2007, diagnoses of infectious syphilis in women rose by 474% (from 78 to 448). As incidence has risen cases of congenital syphilis have emerged. In recent years around six cases have been reported each year through genitourinary medicine clinics but this probably only represents 30% to 50% of the cases that occur. Cases can be prevented through antenatal screening and appropriate treatment. Control methods are highly cost effective but are dependent on well-structured healthcare pathways.

The re-emergence of congenital syphilis reflects a failure of prenatal care delivery systems as well as syphilis control programmes and concerns have been raised about the effectiveness of the present control strategies. In particular, control efforts have been restricted by the absence of comprehensive systematic national surveillance of congenital syphilis.

This investigation compliments a study of antenatal screening pathways being undertaken by the Syphilis Task Group, a sub-committee of the National Screening Committee.

Objectives

The study aims to:

- determine the incidence of congenital syphilis in children under two years of age over a three year period
- compare the incidence, management and presentation of cases with that observed in the similar UK study carried out in the 1990s which used a similar methodology (Hurtig A-K, 1998)
- compare the coverage of the available routine surveillance systems
- assess the proportion of congenital cases identified/not identified through antenatal screening, and identify factors associated with failure to identify maternal infection, or prevent congenital infection.

Study duration

Surveillance period: January 2010 to December 2012.

Methodology

Case definition

Any child under the age of 24 months with a confirmed or presumptive diagnosis of congenital syphilis or acquired syphilis.

Ethics approval

London REC (Ref: 09/H0718/44) and has Section 251 NIGB permission under HPA reference (PIAG 03-(c)/2001).

Funding

Health Protection Agency.

References

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Gonorrhoea, Syphilis, Chlamydia, and Trichomonas infections in children aged 1 to thirteen years presenting to secondary care

Dr Richard Reading

Summary

Infections which are sexually transmitted in adults, are rare in childhood and we do not know the implications of identification of one of these infections for child protection. There is very little reliable evidence available. We do not know how commonly these infections occur, how often they are thought to be associated with sexual transmission, whether there are characteristic symptoms or reasons for presentation, nor how frequently child protection investigations are initiated and their resulting outcome.

This study of all cases of Gonorrhoea, Syphilis, Chlamydia and Trichomonas (the commonest bacterial and protozoal sexually transmitted infections in adults in the UK) among children under thirteen years in the UK and Ireland will gather epidemiological information to inform all these questions. Although we will not be able to determine the factors which would indicate sexual transmission with any certainty, the study will provide much needed epidemiological information on which to base recommendations about management and child protection implications.

Objectives

The study aims to identify:

- incidence of the four types of sexually transmitted infection in children aged one year up to thirteen years
- types of diagnostic test used
- mode of presentation
- associated clinical features
- features of the history, clinical findings or investigations which would indicate child sexual abuse
- outcome of any child protection procedures

Study duration

Surveillance period: January 2010 to January 2012 (inclusive).

Methodology

Case definition

Any child aged between 1 and 13 years with a diagnosis of Gonorrhoea, Syphilis, Chlamydia or Trichomonas confirmed by laboratory tests.

- For syphilis we include infection at any site.
- For Gonorrhoea, Chlamydia and Trichomonas we include genito-urinary, rectal or oro-pharyngeal infections.

Laboratory tests may vary at different centres but include bacteriological isolation, nucleic acid amplification tests, enzyme linked immuno-assay and serology.

Analytic definition

Appropriate laboratory tests follow guidance in the RCPCH report on Physical Signs of Child Sexual Abuse[1-2] and in a special supplement of the Sexually Transmitted Infections journal devoted to an evidence based review of appropriate diagnostic tests for sexually transmitted infections.[1-3]

Ethics approval

The London Research Ethics Committee (Ref 09/H0718/56) and has been granted Section 251 Support by the Ethics and Confidentiality Committee of the National Information Governance Board ref ECC/BPSU 1-03 (FT1)/2009.

Funding

WellChild.

References

1. “Physical Signs of Child Sexual Abuse. An evidence based review and guidance for best practice” Royal College of Paediatrics and Child Health. Sexually transmitted infection. (Chapter 7). London: RCPCH, 2008

2. A Thomas, G Forster, A Robinson, and K Rogstad, National guideline for the management of suspected sexually transmitted infections in children and young people. *Arch. Dis. Child* 2003; **88:** 303 - 311.
3. Sexually Transmitted Infections 2006; 82(Supplement 4)

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Chylothorax

Ms Caroline Haines and Dr Peter Davis

Summary

A chylothorax develops when chyle, normally transported in lymph vessels throughout the body, builds up around the lungs and exerts pressure on them, making it difficult to breath. Initial treatment usually requires drainage of the chyle by inserting a chest tube placed into the pleural space around the lungs.

Although the development of a chylothorax is relatively uncommon, it does result in significant risks and complications for particular groups of infants and children. Hospital stay can be extended by weeks; there is the risk of a surgical procedure, an increased risk of infection and the potential for a substantial impact on both the child and their family's quality of life.

Almost all previous research into chylothorax has been retrospective and single centre. Very little is known about the situation in the UK or Ireland, either the number of children affected, the severity of the condition, and how the children are treated or their long-term outcome. Until we better understand the scale and nature of the problem, we will continue to be hampered in determining targets for prevention, how best to treat these infants and children and ultimately improve outcome.

Objectives

The study aims to identify:

- the incidence of developing a chylothorax in infants and children ≥ 24 weeks gestation – 16 years in the UK
- the distribution by age, sex and underlying condition of infants and children who develop a chylothorax
- what factors predispose infants and children to developing a chylothorax
- the presenting clinical features in infants and children who develop a chylothorax
- the clinical management or therapeutic approaches used to treat this condition
- the length of treatment required to resolve a chylothorax
- how long do symptoms of chylothorax last
- the outcome for infants and children who develop a chylothorax

Study duration

Surveillance period: 1st June 2010 – 30th June 2011 (inclusive).

Methodology

Case definition

Any infant or child under the age of 16 years, including neonates ≥24 weeks gestation presenting for the first time with one of the following should be reported on the BPSU orange card system:

Inclusion criteria

- A suspected clinical diagnosis of chylothorax, without pleural drainage.

Or

- Where pleural drainage is cloudy / opaque fluid is obtained consistent with chylothorax, but no laboratory confirmation of the diagnosis has been sought.

Or

An accumulation of lymphatic fluid in the pleural space with:

- Triglyceride content >1.1 mmol/litre
- Total cell count >1000 cells / microlitre

Ethics approval

The Institute of Child Health / Great Ormond Street Hospital REC (Ref:10/H0713/27) and has been granted Section 251 Support by the Ethics and Confidentiality Committee of the National Information Governance Board (ECC/BPSU 3-02(FTI).

Funding

Non-Medical Research Grant – UHBristol NHS Foundation Trust. Variety Club Children's Charity, London.

References

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3 Paediatric Intensive Care Audit Network National Report 2004 – 2006 (published June 2007) Universities of Leeds and Leicester. ISBN 978 0 85316 264 3

4 Soto-Martinez M. & Massie J. Chylothorax: Diagnosis & Management in Children. *Paediatric Respiratory Reviews* 2009 **10**: 199-207

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Raised Blood Lead Levels in Children

Dr Ruth Ruggles

Summary

Public health interventions have succeeded in removing most sources of lead from the environment. However, a small proportion of children continue to be exposed to harmful levels of lead, usually in the home. Exposure to lead in children is associated with a range of adverse health effects, from sub-clinical neurodevelopmental impairment to encephalitis.

There are no reliable data on the incidence or prevalence of clinically significant lead toxicity or the prevalence of elevated blood lead concentrations in children in the UK. Currently, the UK has no formal monitoring of childhood blood lead concentrations within laboratory or clinical systems and the public health response to such cases is likely to be sub-optimal. A recent case series indicates that significant obstacles are often encountered in the effective and timely management of cases.

The aim of this study is to provide an estimate of the incidence of elevated blood lead concentrations in children. The study will provide important information on the management of cases, both clinically and in terms of the public health response.

Objectives

The study aims to identify:

- estimate the incidence of elevated lead concentrations in children
- describe the clinical presentation of children with elevated blood lead concentrations
- identify the most common sources of exposure in children
- develop guidance for clinicians and public health practitioners

Study duration

Surveillance period: June 2010 – June 2012 (inclusive).
Follow-up:At 12 months to June 2013.

Methodology

Case definition

Any child, <16 years of age, with a blood lead concentration reported by the laboratory as ≥10µg/dL (or 0.48µmol/L), with or without any of the accepted clinical signs and symptoms of lead toxicity.

Ethics approval

Riverside REC (Ref: 10/H0706/10) and has Section 251 NIGB permission under HPA reference (PIAG 03-(c)/2001).

Funding

Health Protection Agency.

References

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Glutaric Aciduria 1

Dr Beth Cheesebrough

Summary

Glutaric Aciduria 1 (GA 1), also known as Glutaric Acidaemia 1 and Glutaryl CoA Dehydrogenase Deficiency is a rare autosomal recessive inborn error of metabolism caused by deficient activity of the enzyme glutaryl-CoA dehydrogenase. It presents with acute encephalopathy in young children, usually under the age of 2 years. Some individuals have presented with subdural and retinal haemorrhages without a history of trauma and case reports have highlighted the similarity of these findings to those seen in non accidental injury.

We aim to estimate the incidence of GA 1 in children in the UK and Ireland and describe its distribution by age and ethnic group as well as look at symptoms and signs at presentation including the presence or absence of subdural and retinal haemorrhage. We will send out a follow up questionnaire at one year to explore short term morbidity and mortality of these children after diagnosis.

Objectives

The study aims to identify:

- estimation of the incidence of GA 1 in children in the UK and Ireland and its distribution by age and ethnic group
- study of the patterns of clinical presentation and neuro-imaging findings including incidence of subdural or retinal haemorrhage at diagnosis and how this presentation compares /contrasts with findings reported in non accidental injury
- assessment of morbidity at mortality up to one year post diagnosis

Study duration

Surveillance period: 1st July 2010 – 30th July 2012 (inclusive).
Follow-up: At 12 months to July 2013.

Methodology

Case definition

Any child under the age of 16 years with a confirmed or suspected diagnosis of GA 1 should be reported on the BPSU orange card.

The child will be considered to have a proven diagnosis of GA 1 if at least one of the following criteria is met:

- Two known pathogenic mutations on mutation analysis
- Reduced or absent glutaryl-CoA dehydrogenase activity in cultured fibroblasts or leukocytes

The child will be considered to have suspected GA 1 if at least one of the following criteria is met:

- Isolated elevation of glutarylcarnitine on blood spot analysis
- Elevated urinary excretion of glutaric acid and/ or 3-hydroxyglutaric acid

Ethics approval

The Institute of Child Health/Great Ormond Street Hospital Research Ethics Committee Ref 10/H0713/10 and by the NIGB Ethics and Confidentiality Committee (Ref: 38998/86476/4/1000).

Funding

Sir Peter Tizard Bursary.

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Bacterial meningitis in babies <90 days of age

Dr I Okike

Dr Paul Heath

Summary

Meningitis is associated with significant mortality and morbidity in infants in the first 3 months of life. The most recent national surveillance study (1996-7) identified an overall mortality of 10% with 50% of cases having some form of disability at 5 year follow-up (24% serious); a risk of serious disability 16-fold higher than that of GP-matched controls. The mortality has declined over the last 2 decades but there has been no change in the long term morbidity. There are a number of reasons why the epidemiology and management of meningitis in this age group may have changed over the last 10 years and an accurate picture of this is needed to allow prioritisation and development of new strategies.

Objectives

Primary Objective:

To define the minimum incidence of meningitis in the UK and Ireland in infants aged less than 90 days

Secondary Objectives:

1. to define the bacterial pathogens that causes meningitis in this age group (and the antibiotic resistance profiles of these pathogens).
2. to describe the clinical presentation of cases of meningitis in this age group.
3. to describe the mortality and short-term complication rates of meningitis in this age group.

Study duration

Surveillance period: July 2010 – July 2011 (inclusive).

Methodology

Case definition

Any case where the clinician has made a clinical diagnosis of bacterial meningitis in babies less than 90 days of age.

Ethics approval

The Cambridgeshire 2 REC (Ref: 10/H0308/45) and has been granted NIGB Section 251 Support Ref: PIAG/ BPSU 6-06(FT1)/2008.

Funding

Meningitis Research Foundation.

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Dr. Alan Johnson. Health Protection Agency, London
Dr. Mark Anthony. Consultant Neonatologist, Oxford

6 International Network of Paediatric Surveillance Units (INoPSU)

Figure 19: International Network of Paediatric Surveillance Units (INoPSU)

Background

Following the success of the BPSU, the same methodology was adopted and adapted in the 1990s to other countries who wished to set up active paediatric surveillance systems. In 1992, surveillance units were established in the Netherlands and Germany and, in 1994, in Switzerland. The European initiative was also the stimulus for the development in 1992 of an Australian unit and later the Malaysian unit (1994) to be followed by units in Canada (1996), Papua New Guinea (1996), New Zealand and Latvia (1997), Portugal (2001) and Greece/Cyprus (2003). Wales (1994) and Republic of Ireland (1996) developed surveillance units using a similar methodology to the BPSU, but some include more common disorders in their surveillance. Unfortunately the Papua New Guinea unit is currently not active. However, Argentina and, Italy continue to show an interest in developing surveillance units and in 2010 a Scottish surveillance unit was established.

INoPSU missions is to advance of knowledge of rare and uncommon childhood infections and disorders and enable the participation of paediatricians in surveillance on a national and international basis, in order to achieve a series of benefits to clinical practice and health policy.

Over the past 10 years, INoPSU countries have facilitated the surveillance of over 200 different rare conditions, covering a child population of over 50 million and involving over 10,000 clinicians. Details on all the activities of each surveillance unit is available form their respective websites and also from the INoPSU website, where the current annual report can be found

Using similar research protocols, the units can provide an efficient, effective framework for case finding across national populations. Comparison of hyperbilirubinaemia, eating disorders and congenital rubella cases has demonstrated this through recent presentations at international conferences. It also led in June 2007 to the publication of a joint paper entitled - Beyond counting cases: public health impacts of national paediatric surveillance units in ADC vol. 92: 527-533.

To strengthen the links between units a bi-annual conference is held, the next is to take place in Dublin, Ireland in October 2010. We have also established a research database of all the studies undertaken, the researchers involved and the output from the studies.

For further information on INoPSU visit www.inopsu.com.

APPENDIX A - Completed Studies 1986-2009

By the end of 2009 the BPSU had facilitated surveillance of 79 conditions. Information about these studies has been included in previous annual reports of the BPSU, which are available from the BPSU office and are also listed on the BPSU website (http://bpsu.inopsu.com/studies/completed.html). Information on studies recently completed, principal investigators and definitive papers are listed over.

Acute flaccid paralysis

Acute rheumatic fever

Adverse neonatal outcomes of delivery or labour in water

Androgen insensitivity syndrome

Biliary atresia

Cerebral oedema and death following diabetic ketoacidosis

Cerebrovascular disease, stroke and like illness

Chemistry set poisoning

Congenital brachial palsy

Congenital cataract

Congenital cytomegalovirus

Congenital dislocation of the hip

Congenital syphilis

Congenital toxoplasmosis

Drowning and near drowning

Encephalitis in early childhood (2 months – 3 years)

Fatal/Severe allergic reactions to food ingestion

Galactosaemia

Group B Streptococcal disease

Haemolytic uraemic syndrome (I-II)

Haemophagocytic lymphohistiocytosis

Haemorrhagic shock encephalopathy syndrome

Hepatitis C virus infection

Higher order births

Inflammatory bowel disease in under 20 year olds

Insulin dependent diabetes in under fifteens

Insulin dependent diabetes in under fives

Internal abdominal injury due to child abuse

Invasive fungal infections in VLBW infants

Invasive Haemophilus influenzae infection

Juvenile dermatomyositis

Kawasaki disease

Langerhans cell histiocytosis

Long term parenteral nutrition

Lowe syndrome

Measles, mumps, rubella-meningococcal meningitis

Medium chain acyl-CoA dehydrogenase

Neonatal herpes

Neonatal meningitis

Neonatal necrotising enterocolitis

Non-accidental poisoning/ Munchausen syndrome by proxy

Pyridoxine dependent seizures

Rett syndrome

Reye's syndrome

Severe complications of varicella (chickenpox) in hospitalised children

Severe hyperbilirubinaemia

Severe visual impairment /Blindness

Subacute sclerosing panencephalitis

Subdural haematoma and effusion

Suspected fatal adverse drug reaction in children

Thrombosis in childhood

Transient and permanent neonatal diabetes

Tuberculosis

Vitamin K deficiency bleeding (I-III)

X-linked anhydrotic ectodermal dysplasia

Thyrotoxicosis in children
Surveillance Period: September 2004 – September 2005
Investigator: Dr Scott Williamson, Dr S A Greene
Published Paper: S Williamson, S A. Greene. Incidence of thyrotoxicosis in childhood: a national population based study in the UK and Ireland. *Clinical Endocrinology.* 2010; **72(3)**: 358- 363

Early onset eating disorders in children under 13 years
Surveillance Period: March 2005 – March 2006
Investigator: Dr Dasha Nicholls, Mr Richard Lynn, Dr Russell Viner
Published Paper: 21st BPSU Annual Report 2006/07. BPSU London 2007

Neonatal herpes simplex virus (HSV)
Surveillance Period: January 2004 – January 2007
Investigator: Dr Pat Tookey, Mr Richard Lynn, Professor Catherine Peckham
Published Paper: 21st BPSU Annual Report 2006/07. BPSU London 2007

Malaria
Surveillance Period: January 2006 – January 2007
Investigator: Dr Shamez Ladhani
Published Paper: 22nd BPSU Annual Report 2007/08. BPSU London 2008

Methicillin-Resistant Staphylococcus (MRSA)
Surveillance Period: June 2005 – June 2007
Investigator: Dr Alan Johnson, Dr Catherine Goodall, Dr Mike Sharland
Published Paper: AP Johnson, M Sharland, C Goodall, R Blackburn, A Kearns, R Gilbert, T Lamagni, A Charlett, M Ganner, R Hill, B Cookson, D Livermore, J Wilson, R Cunney, A Rossney, G Duckworth. Enhanced surveillance of methicillin-resistant Staphylococcus aureus (MRSA) bacteraemia in children in the UK and Ireland. *Arch Dis Child*. 2009 Oct 11. doi: 10.1136/adc.2009.162537

Childhood scleroderma
Surveillance Period: July 2005 – July 2007
Investigator: Dr Anne Herrick, Dr Eileen Baildam
Published Paper: A Herrick, H Ennis, M Bhushan A Silman, E Baildam. Incidence of childhood linear scleroderma and systemic sclerosis in the UK and Ireland. *Arthritis Care & Research* 2010; **62(2)**: 213–218

Medium chain aycl CoA dehydrogenase deficiency
Surveillance Period: June 2004 – May 2008
Investigator: Professor Carol Dezateux, Ms Juliet Oerton, JM Khalid
Published Paper: 23rd BPSU Annual Report 2008/09. BPSU London 2009

Feto-maternal alloimmune thrombocytopenia
Surveillance Period: October 2006 – October 2008
Investigator: Dr Marian Knight
Published Paper: 23rd BPSU Annual Report 2008/09. BPSU London 2009

Vitamin K deficiency bleeding
Surveillance Period: October 2006 – October 2008
Investigator: Dr Alison Busfield, Dr A McNinch
Published Paper: 23rd BPSU Annual Report 2008/09. BPSU London 2009

Intussusception in children aged less than 12 months
Surveillance Period: March 2008 – March 2009
Investigator: Professor Brent Taylor, Dr Haitham El Bashir, Dr Lamiya Samad, Richard Lynn
Published Paper: 23rd BPSU Annual Report 2008/09. BPSU London 2009

APPENDIX B - Publications and Presentations 2009-10

BPSU

Presentations

1. RL Knowles, R Lynn, H Friend, S Mitchell, C Michie, C Ihekweazu. The British Paediatric Surveillance Unit: A public health evaluation. Royal College of Paediatrics and Child Health 13th Spring Meeting, York, 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract G221
2. H Friend, C Ihekweazu, RL Knowles, S Mitchell, C Michie, R Lynn. Evaluating the British Paediatric Surveillance Unit: Views from users of the system. Royal College of Paediatrics and Child Health 13th Spring Meeting, York, April 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract G246

Congenital adrenal hyperplasia

Presentations

3. RL Knowles, JM Khalid, J Oerton, C Kelnar, P Hindmarsh, C Dezateux. Clinical presentation of older children with congenital adrenal hyperplasia: an important outcome for newborn screening policy. 14th Annual Meeting of the Royal College of Paediatrics and Child Health, Warwick, UK, April 2010. *Arch Dis Child* 2010; **95**(suppl-1)
4. RL Knowles, JM Khalid, J Oerton, P Hindmarsh C, Kelnar, C Dezateux. Congenital adrenal hyperplasia. Workshop presentation, NSC Fetal, Maternal and Child Health Subgroup workshop on extended newborn screening, March 2010
5. RL Knowles, JM Khalid, J Oerton, P Hindmarsh C, Kelnar, C Dezateux. Congenital adrenal hyperplasia – the UK view. Workshop presentation, UK Newborn Screening Laboratories Network, March 2010
6. JM Khalid, C Dezateux, J Oerton C, Kelnar, P Hindmarsh, RL Knowles. Late onset congenital adrenal hyperplasia (CAH): clinical presentations with important implications for newborn screening policy. UCL Institute of Child Health, November 2009, London, UK
7. RL Knowles, JM Khalid, J Oerton, P Hindmarsh, C Kelnar, C Dezateux. Prevalence and clinical features of congenital adrenal hyperplasia (CAH) in a multiethnic population without newborn screening. 6th ISNS European Regional Meeting, April 2009, Prague, Czech Republic
8. JM Khalid, C Dezateux, J Oerton, C Kelnar, P Hindmarsh, RL Knowles. Prevalence and clinical features of newly diagnosed congenital adrenal hyperplasia in the UK. Royal College of Paediatrics and Child Health 13th Spring Meeting, York, 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract P6

CNS – Demyelination

Presentation

9. Dr E Wassmer. Demyelinating disease in childhood. Invited Lecture. 14th Annual Meeting of the Royal College of Paediatrics and Child Health, April 2010, Warwick, UK

Conversion Disorder

Presentations

10. A Cornelius, R Reading, R Lynn, V James, S Forlee, E Garralda. 19th World congress of International Association of Child and Adolescent Psychiatry and Allied Professions. June 2010. Beijing, China

Early onset eating disorders

Presentations

11. D Nicholls. Early onset eating disorders – Developing a psychiatry reporting scheme. BPSU Conference March 2009, London, UK

Emerging infections in children

Presentations

12. D Shingadia. Emerging infections in children. BPSU Conference March 2009, London, UK

Feto-maternal alloimmune thrombocytopenia

Presentations

13. M Knight. Feto-maternal alloimmune thrombocytopenia–Developing joint paediatric and obstetric reporting. BPSU Conference March 2009, London, UK

Herpes in children

Presentations

14. R Reading, P Tookey. Herpes in children. BPSU Conference March 2009, London, UK

HIV/AIDS

Publications

15. A Judd, R Ferrand, E Jungmann, C Foster, J Masters, B Rice, H Lyall, P Tookey, K Prime. Vertically acquired HIV diagnosed in adolescence and early adulthood in the United Kingdom and Ireland: findings from national surveillance. HIV Medicine 2009; **10**:253-256.
16. CL Townsend, BA Willey, M Cortina-Borja, CS Peckham, PA Tookey. Antiretroviral therapy and congenital abnormalities in infants born to HIV-infected women in the UK and Ireland, 1990-2007. *AIDS* 2009; **23**:519-524
17. A Riordan, A Judd, K Boyd, D Cliff, K Doerholt, H Lyall, E Menson, K Butler, D Gibb; Collaborative HIV Paediatric Study. Tenofovir use in human immunodeficiency virus-1-infected children in the United Kingdom and Ireland. *Pediatr Infect Dis* J. 2009; **28(3)**:204-9

18. C Foster, A Judd, P Tookey, G Tudor-Williams, D Dunn, D Shingadia, K Butler, M Sharland, H Lyall, D Gibb. Young people in the UK and Ireland with perinatally acquired HIV: the paediatric legacy for adult services. *AIDS Patient Care STDS*. 2009; **23(3)**: 159-166
19. CD Hankin, EGH Lyall, CS Peckham, JI Masters, PA Tookey. In utero exposure to antiretroviral therapy: UK clinic-based follow-up 2002-2005. *AIDS Care* 2009; **21(7)**: 809-816

Presentations

20. J Masters, C Peckham, P Tookey. Children Born Abroad And Diagnosed With HIV Infection In The UK/Ireland, 2000–08 Royal College of Paediatrics and Child Health Conference 22nd April 2010 UK. *Arch Dis Child* 2010; **95**(suppl-1):A23–A38
21. CL Townsend, PA Tookey, M Cortina-Borja. Premature delivery and mother-to-child transmission: risks and benefits of HAART in pregnancy. 16th Conference on Retroviruses and Opportunistic Infections (CROI), Montreal, Canada, 8-11 February 2009
22. J Masters, CS Peckham, PA Tookey. Monitoring cancer and death in uninfected children born to HIV-infected women in England and Wales 1996-2006. Royal College of Paediatrics and Child Health 13th Spring Meeting, York, 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract G30
23. H Haile-Selassie, J Masters, C Townsend, P Tookey. HIV infection in Central and Eastern European pregnant women living in the UK/ Ireland: data from national Surveillance 1992-2007. BHIVA 2009 (Poster). *HIV Medicine* 2009; **10**(suppl-1): 42
24. S Huntington, T Chadborn, J Masters, P Tookey, V Delpech. Comparison of the clinical and demographic characteristics of HIV-infected pregnant women with HIV-infected non-pregnant women seen for care in England, Wales and Northern Ireland. BHIVA 2009 (Poster). *HIV Medicine* 2009; **10**(suppl-1): 24
25. C Wood, J Daniels, H Lyall, P Tookey, M Conway. Don't forget the children: the dangers of undiagnosed HIV infection in children with HIV-positive parents attending adult HIV services. BHIVA 2009 (Poster). *HIV Medicine* 2009; **10**(suppl-1): 25
26. L Bansi, C Thorne, P Tookey and C Sabin. Linkage of the UK Collaborative HIV Cohort (CHIC) study and National Study of HIV in Pregnancy and Childhood (NSHPC) to assess ART patterns in pregnant women. BHIVA 2009 (Poster). *HIV Medicine*, 2009; **10**(suppl-1): 27
27. C Townsend, H Haile-Selassie, M Cortina-Borja, P Tookey. Neonatal antiretroviral prophylaxis in infants born to HIV-infected women in the UK and Ireland. 1st International Workshop on HIV Pediatrics, July 2009, Cape Town, South Africa (*poster*)
28. C Townsend, P Tookey, ML Newell, M Cortina-Borja. Prematurity and mother-to-child transmission: risk-benefit analysis of antiretroviral therapy in pregnancy. 1st International Workshop on HIV Paediatrics, July 2009, Cape Town, South Africa
29. CL Townsend, J Schulte, C Thorne, K Dominguez, M Cortina-Borja, CS Peckham, B Bohannon, PA Tookey, M-L Newell. Exploring heterogeneity in the association between HAART and prematurity in three observational studies. 5th IAS Conference on HIV Pathogenesis, Treatment and Prevention, July 2009. Cape Town, S Africa
30. P Tookey and J Masters. Perinatal HIV infection in the UK/Ireland: does maternal seroconversion during breastfeeding play a role? HPA Conference, September 2009. Warwick, UK (*poster)*
31. S Huntington, T Chadborn, J Masters, P Tookey, V Delpech. What proportion of HIV-infected women in England, Wales and Northern Ireland are pregnant and how do they differ from non-pregnant women? HPA Conference, September 2009. Warwick, UK (*poster*)
32. RM Crossley, K Doerholt, J Masters, E Menson, M Sharland, EH Lyall, M Erlewyn-Lajeunesse. Paediatric mortality from HIV in the UK and Ireland: a CHIVA network survey. ESPID 2009. The Pediatric Infectious Disease Journal, November 2009 - Volume 28 - Issue 11

Idiopathic intracranial hypotension

Presentations

33. YY Matthews. Incidence of Childhood Idiopathic Intracranial Hypertension in the UK & Ireland – A Preliminary Report, Oral presentation at 8th Congress of the European Paediatric Neurology Society 30 September – 3 October 2009, Harrogate International Centre, UK. Abstract published in the European Journal of Paediatric Neurology, 2009; **13** S1- S21

Intussusception in children less than 12 months of age

Presentations

34. L Samad, HE Bashir, S Marven, JC Cameron, R Lynn, A Sutcliffe, B Taylor. Intussusception In The First Year Of Life: A UK National Surveillance Study. 14th Annual Meeting of the Royal College of Paediatrics and Child Health, Warwick, UK, April 2010. *Arch Dis Child* 2010; **95**(suppl-1): A1–A7

Langerhans cell histiocytosis

Publications

35. J A Salotti, V Nanduri, M S Pearce, L Parker, R Lynn, K P Windebank. Incidence and clinical features of Langerhans cell histiocytosis in the UK and Ireland. *Arch Dis Child* 2009; **94**: 376 – 380

Medium chain acyl CoA dehydrogenase deficiency (MCADD)

Publications

36. JM. Khalid, J Oerton, G Besley, N Dalton, M Downing, A Green, M Henderson, S Krywawych, V Wiley, B Wilcken, C Dezateux on behalf of the UK Collaborative Study of Newborn Screening for MCADD. Relationship of Octanoylcarnitine Concentrations to Age at Sampling in Unaffected Newborns Screened for Medium-Chain Acyl-CoA Dehydrogenase Deficiency. *Pediatric Clinical Chemistry;* **56 (6)**. April 22, 2010 as doi: 10.1373/clinchem.2010.143891
37. JV Leonard, C Dezateux. Newborn screening for medium chain acyl CoA dehydrogenase deficiency. *Arch Dis Child* 2009; **94(3)**: 235-8.

Presentations

38. J Oerton, JM Khalid, A Chakrapani, M Champion, M Cleary4, M Sharrard, JWalter, J Leonard, BS Andresen, C Dezateux. Clinical outcome at 2 years following diagnosis of medium chain acyl Coenzyme A dehydrogenase deficiency through newborn screening: findings from the prospective UK collaborative and British Paediatric Surveillance Unit Studies. Royal College of Paediatrics and Child Health Conference 22nd April 2010, Warwick. *Arch Dis Child* 2010; **95**(suppl-1): A1–A7

39. J Oerton, JM Khalid, BS Andresen, C Dezateux, et al. Spectrum of Medium Chain Acyl CoA Dehydrogenase (MCAD) mutations identified from newborn screening of 1.14 million ethnically diverse infants. 6th ISNS European Regional Meeting, 27th April 2009, Prague, Czech Republic

Methicillin-resistant Staphylococcus aureus (MRSA) in children

Publications

40. AP Johnson, M Sharland, C Goodall, R Blackburn, A Kearns, R Gilbert, T Lamagni, A Charlett, M Ganner, R Hill, B Cookson, D Livermore, J Wilson, R Cunney, A Rossney, G Duckworth. Enhanced surveillance of methicillin-resistant Staphylococcus aureus (MRSA) bacteraemia in children in the UK and Ireland. *Arch Dis Child* 2009 Oct 11.

Presentations

41. A Johnston. The rise of Methicillin-resistant Staphylococcus aureus in children. BPSU Conference March 2009, London, UK

Neonatal hyperbilirubinaemia

Presentations

42. D Manning. Neonatal hyperbilirubinaemia – Informing NICE guidelines. BPSU Conference March 2009, London, UK

Non-type 1 diabetes

Publications

43. JP Shield, R Lynn, KC Wan, L Haines, TG Barrett. Management and 1 year outcome for UK children with type 2 diabetes. *Arch Dis Child* 2009; **94(3)**: 206-9.

Progressive intellectual and neurological deterioration (PIND)

Publications

44. CM Verity, AM Winstone, L Stellitano, RG Will, A Nicoll. The Epidemiology of Progressive Intellectual and Neurological Deterioration in Childhood. A*rch Dis Child*, published online November 29, 2009 doi: 10.1136/adc.2009.173419
45. CM Verity AM Winstone, L Stellitano, D Krishnakumar, R McFarland, R Will. The clinical presentation of mitochondrial diseases in children with progressive intellectual and neurological deterioration (PIND): a national prospective population-based study. *Dev Med Child Neurol,* 2009; **52(5)**: 434 -440
46. K Murray; J Peters; L Stellitano; AM Winstone; CM Verity; RG Will. Is there evidence of vertical transmission of variant CJD? *J Neurol Neurosurg Psychiatry* 2009 published online doi: 10.1111/j.1469-8749.2009.03463.x

Presentations

47. AM Winstone, CM Verity, L Stellitano PIND Research Group, The clinical presentation and diagnosis of juvenile neuronal ceroid lipofuscinosis: A prospective national study. Royal College of Paediatrics and Child Health Conference 22nd April 2010, Warwick. *Arch Dis Child* 2010; **95**(suppl–1):A8–A13
48. N Smith, AM. Winstone, L Stellitano, T Cox, C Verity Paediatric GM2 Gangliosidosis: the changing characteristics of disease in contemporary U.K. patients, British Paediatric Neurology Association Meeting, January 2010, Edinburgh, Scotland
49. AM Winstone. The clinical presentation and diagnosis of juvenile neuronal ceroid lipofuscinosis: a prospective national study. Royal College of Paediatrics and Child Health, 14th Annual Meeting, April 2010, Warwick, UK

50. L Metayer. The Clinical Presentation of Late Infantile and Variant Late Infantile Neuronal Ceroid Lipofuscinosis (NCL): UK research findings. European Paediatric Neurology Society, October 2009, Harrogate, UK
51. C Verity. Do clinical features of mitochondrial diseases vary with the age at presentation? Findings of a UK-wide study. European Society for Paediatric Research, October 2009, Hamburg, Germany
52. C Verity, L Stellitano, AM Winstone. Leigh syndrome – a familiar phenotype but a disappearing disease?" Royal College of Paediatrics and Child Health 13th Spring Meeting, York, 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract G182. (*poster*)
53. C Verity, L. Stellitano, AM Winstone, D Krishnakumar. "Is it possible to diagnose mitochondrial disease on the basis of the clinical presentation?" British Paediatric Neurology Association Annual Meeting. January 2009, Birmingham, UK
54. A. Maw, L Stellitano, AM Winstone, C Verity. "The clinical features of children with unclassified leucoencephalopathy in a national prospective population study." British Paediatric Neurology Association Annual Meeting. January 2009. Birmingham, UK (*poster*)

Severe complications of varicella in hospitalised children

Presentations

55. JC Cameron. Varicella surveillance – Implications for immunisation policy. BPSU Conference March 2009, London, UK

Scleroderma

Publications

56. A Herrick, H Ennis, M Bhushan, A Silman, E Baildam. Incidence of childhood linear scleroderma and systemic sclerosis in the UK and Ireland. Arthritis Care & Research 2010; 62 (2): 213–218

Presentations

57. A Herrick, H Ennis, E Baildam. Incidence of childhood scleroderma in the UK and Ireland. Royal College of Paediatrics and Child Health 13th Spring Meeting, York, 2009. *Arch Dis Child* 2009; **94**(suppl-1): Abstract G206

Sudden unexpected postnatal collapse

Presentations

58. J-C Becher. Sudden Unexpected Postnatal Collapse. Invited lecture. Reason meeting. July 2010, University of Warwick
59. J-C Becher. Early Postnatal Collapse in the Term Newborn. Invited lecture. Royal College of Paediatrics and Child Health 14th Annual Meeting, University of Warwick. April 21st 2010

Thyrotoxicosis

Publications

60. S Williamson, S A. Greene. Incidence of thyrotoxicosis in childhood: a national population based study in the UK and Ireland. Clinical Endocrinology. 2010; **72(3)**: 358- 363

Tuberculosis

Publications

61. S S Teo, A Riordan, M Alfaham, J Clark, MR Evans, M Sharland, V Novelli, JM Watson, P Sonnenberg, A Hayward, J Moore-Gillon, D Shingadia for the British Paediatric Surveillance Unit Childhood Tuberculosis Study Group. Tuberculosis in the United Kingdom and Republic of Ireland. *Arch Dis Child* 2009; **94**: 263 - 267.
62. S S Teo, A Riordan, M Alfaham, J Clark, MR Evans, JM Watson, A Riordan, P Sonnenberg, J Clark , A Hayward, M Sharland, J Moore-Gillon , V Novelli, D Quinn, D Shingadia for the British Paediatric Surveillance Unit Childhood Tuberculosis Study Group. An evaluation of the completeness of reporting of childhood tuberculosis. Eur Respir J 2009; **34**: 1–4 DOI: 10.1183/09031936.00031808

Vitamin K prophylaxis

Presentations

63. A Busfield, R Samuel, A McNinch, J Tripp Vitamin K prophylaxis and vitamin k deficiency Bleeding in the UK. Royal College of Paediatrics and Child Health Conference 22nd April 2010 UK. *Arch Dis Child* 2010; **95**(suppl -1): A65–A73
64. A McNinch. Vitamin K prophylaxis – A moving goalpost. BPSU Conference March 2009, London, UK

APPENDIX C - Membership of Executive Committee 2009- 2010

Professor Allan Colver*	Chair
Professor Alan Emond	Chair
Mrs Sue Banton	Patient and Carers Advisory Group
Dr Katy Sinka	Health Protection Scotland
Dr Colin Campbell	Medical Advisor (infectious disease)
Dr Piers Daubeney	Consultant Paediatric Cardiologist
Professor Carol Dezateux	University College London - Institute of Child Health
Dr Shankar Kanumakala	Consultant in Paediatric Endocrinology
Ms Linda Haines	Royal College of Paediatrics and Child Health Science and Research Dept
Dr Sue Hobbins	Royal College of Paediatrics and Child Health Treasurer
Dr Rachel Knowles	Medical Advisor (non-infectious disease)
Mr Richard Lynn	Scientific Coordinator
Dr Colin Michie	Consultant Paediatrician
Dr Simon Mitchell	Consultant Neonatologist
Professor Neena Modi	Royal College of Paediatrics and Child Health Science and Research Dept
Dr Richard Pebody	Health Protection Agency
Dr Richard Reading	Consultant Community Paediatrician
Dr Delane Shingadia	Consultant in Paediatric Infectious Disease
Mrs Anne Seymour	Patient and Carers Advisory Group
Dr Ted Wozniak	Department of Health (observer)
Mr Zoltan Bozoky	Department of Health (observer)

* Stepped down in 2009

Notes

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