

Neurology

G95 INCIDENCE OF CHILDHOOD STROKE IN THE UK: DATA FROM THE BRITISH PAEDIATRIC SURVEILLANCE UNIT AND THE STRATEGIC HEALTH AUTHORITY

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Background: Previous studies of childhood stroke have quoted figures for incidence of 1.29 to 13 per 100,000 but the reasons for the discrepancies are not clear. The provision of services for this previously neglected group of patients depends on accurate numbers.

Methods: The orange card system of the British Paediatric Surveillance Unit (BPSU) was used to report cases of childhood stroke and/or cerebrovascular disease (CVD) from January 2001 to January 2002. Additional surveys of neurosurgeons, radiologists, paediatric cardiologists, cardiothoracic surgeons and haematologists were conducted using a similar system (parallel surveillance). The follow-up questionnaires were carefully scrutinised for adherence to the definition and duplicates were removed. ICD10 codes for diagnoses at discharge were obtained from the Strategic Health Authority (SHA) database.

Results: For the period from 1st January to 31st March 2001, there were 72 notifications (9 haemorrhages) to the BPSU (n=64) or the parallel surveillance systems (n=8). From the SHA data during the same period, there were 63 hospital admissions in children for diagnoses very likely to be acute stroke and/or CVD (I601-I691) (31 haemorrhages) and an additional 4 for transient ischaemic attack, 82 for 'hemiplegia', 49 for complicated migraine and 65 for miscellaneous vascular conditions.

Conclusion: There may be a difference in the numbers of children with childhood stroke and/or cerebrovascular disease reported from the BPSU and the discharge coding. This might be due to previously unrecognised differences in definition, to duplication in the SHA database because of inclusion of chronic conditions or transfer between hospitals, to under-reporting by the doctors surveyed or the possibility that other professionals see these patients. A childhood stroke registry might allow review of the data for admissions coded as stroke or CVD.

G96 ROLE OF LONG TERM EEG MONITORING IN THE DIAGNOSIS AND TREATMENT OF EPILEPSY IN CHILDREN IN A DISTRICT GENERAL HOSPITAL

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Background: Prolonged (12hrs+) inpatient or outpatient EEG monitoring may help in distinguishing epilepsy from non-epileptic disorders and in seizure classification.

Aims: To look at the indications and appropriateness of requests for prolonged EEG recordings in a large DGH over 2 years and to see how the results influenced management.

Method: Medical history, results of standard and prolonged EEG recordings and treatment given were reviewed retrospectively in 79 children with possible seizures.

Results: Prolonged EEG recordings were requested in 48/79 children to establish the nature of reported 'events'; in 11/79 children being treated for epilepsy to investigate an increase in seizure frequency or a change in type of seizures; in 15/79 children to obtain a sleep recording or a prolonged EEG; in 5/62 children there was no clear indication.

In 41/79 patients a typical event was captured and in 13/41 there was positive correlation with paroxysmal EEG abnormalities. In 19/41 of these patients the decision to treat or to withhold/stop treatment was determined by the results of the EEG recording.

In 38/79 where no event was captured, the results helped nonetheless the management in 8 patients and suggested a diagnosis of fictitious illness in one patient; in 30/38 treatment was decided on the basis of clinical history.

Conclusions: Requests for long term EEG were considered appropriate in 45/79 cases. Overall the results of this investigation influenced management in 27/79 cases. These data confirm that long-term EEG recording has an important role in the diagnosis and management of epilepsy in children and can be appropriately used in a District General Hospital.

G97 MRI AND T2 RELAXOMETRY OF THE BRAIN, COGNITIVE AND FINE MOTOR FUNCTION IN PRETERM INFANTS AT 7 YEARS

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Background: Children who were born preterm (PT) have a higher prevalence of motor and cognitive defects at school age. Whilst major neuro-developmental sequelae are associated with easily visible lesions on brain MRI, lesser deficits are usually not. T2 relaxation times are longer if the brain has a higher water content, and may indicate the degree of myelination under certain conditions.

Aim: To determine whether motor and cognitive problems at 7 years in preterm children attending mainstream schools were associated with cerebral white matter abnormalities on MRI.

Methods: 103 PT children born before 33 weeks gestation were studied at age 7 years with detailed MR brain scans, including a T2-mapping sequence from which T2 relaxation times of the cerebral white matter (CWM) and hippocampal formations (HP) were calculated. All of the children had no major neuro-disability, and had previously undergone assessment of IQ (Wechsler-III) and motor coordination (Movement ABC).

Results: 20 infants had lesions visible on MRI. 14 had periventricular leucomalacia, 14 ventriculomegaly, 8 thinning of the posterior corpus callosum (TCC), and 2 porencephaly. Children without lesions on MRI had a significantly higher mean IQ (93 v 83, p=0.004). Children with TCC had higher median impairment scores on the ABC (20 v 7.75, p=0.01). T2 relaxation times for HP were not related to IQ or ABC scores. Mean CWM T2 relaxation times were longer (91.5ms v 89.4 right, 93.2ms v 90.1 left, p=0.01) in children with high (<5th centile) impairment scores on the ABC, but not related to IQ. These differences remained significant after excluding the 20 infants with visible MRI lesions.

Conclusions: Children born prematurely without major disability or visible lesions on MRI have a diffuse abnormality of CWM which is associated with minor motor impairment, but not a lower IQ.

G98 NEURO-DEVELOPMENTAL OUTCOMES IN HIV INFECTED CHILDREN PRESENTING BEFORE 3 YEARS OF AGE

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Background: Effective treatment for children with HIV has led to a greatly improved long-term prognosis. With prolonged survival, the developmental needs of HIV infected children are more important.

Aims: To compare neurological and early developmental outcomes for children presenting with severe HIV (Category C, CDC Classification 1994, where HIV encephalopathy was not the presenting illness) (Group 1) or mild/moderate disease (Category A/B) (Group 2).

Methods: Systematic evaluations of neurological and developmental functions. Neurological examination by a paediatric physiotherapist & paediatrician. Developmental was assessed on the Bayley Scales of Infant Development by a clinical psychologist & physiotherapist.

Results: Neurology: Group 1 (n=32), mean age at assessment 16mths (7–26mth), 43% (13/32) abnormal neurological signs, mostly diplegia within increased tone. Group 2 (n=31), mean age at assessment 18mths (8–33mth), 7% (2/31) abnormal neurological signs, both mild diplegia (Chi² p<0.001). Developmental Scores: Group 1, only 20% scored within the average range (+1 to -1 SD score) for the Bayley test in both mental and motor function. Group 2, 61% scored within the average range for the Bayley test in both mental and motor function (Chi² p<0.05). Group 2 scores were more normally distributed around the mean, in Group 1 a higher number of children had scores <-3 SD. There were no differences between the groups for mode of delivery, prematurity, or social factors (ethnic origin, siblings, etc).

Conclusions: Children with HIV presenting early with severe disease are more likely to have abnormal neurology with motor difficulties & developmental delay than those who have less symptomatic disease. These findings have implications not only for specialist HIV clinics but also for community child development services.

G99 THE UNITED KINGDOM INFANTILE SPASM STUDY (UKISS) COMPARING VIGABATRIN WITH PREDNISOLONE OR TETRACOSACTIDE IN WEST SYNDROME IN A RANDOMISED TRIAL: THE CONTROL OF INFANTILE SPASMS AT 14 DAYS.

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West's syndrome is a serious epileptic disorder in infants defined as infantile spasms (an unusual but characteristic seizure consisting of batches or clusters of spasms) in association with an EEG appearance called hypsarrhythmia. Infants with an EEG compatible with the diagnosis of West's syndrome and clinical evidence of spasms were enrolled in a multicentre trial with a two stage randomisation procedure comparing vigabatrin with "steroids" and if "steroids" to either tetracosactide or prednisolone. Minimum doses were: vigabatrin 100mg/kg, oral prednisolone 40mg per day, or IM tetracosactide depot 0.5mg alt days. Cessation of spasms on days 13 and 14 was the early main outcome measure. EEG response was also analysed. Recruitment continued from July 1999 – Dec 31st 2002. The following outcome data will be available for all infants (n=106) and will be analysed by intention to treat: cessation of spasms, electroclinical response (cessation of spasms and disappearance of hypsarrhythmia) and adverse events in those allocated vigabatrin (n=52), "steroids" (n=54), within which was prednisolone (n=29) or tetracosactide (n=25) (n=number enrolled by 27th November 2002).

The infants will be followed until aged 14 months when a seizure assessment and development (using the Vineland questionnaire) are analysed. To date, this is by far the largest randomised controlled trial comparing different medicines in West's syndrome.

G100 SUBLINGUAL LORAZEPAM AT HOME FOR ACUTE TREATMENT OF SEIZURES

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Seizures are often initially treated at home. The standard treatment is rectal diazepam. Sublingual (SL) lorazepam is easy to administer but has not been well evaluated for efficacy in epilepsy. It has been reported to be effective for serial seizures in 10 children.¹

Aim: To study the efficacy of SL lorazepam for seizures in children at home.

Method: After informed consent 18 children were enrolled in the study. The parents were instructed to use SL Lorazepam for seizures lasting at least 5 minutes. After each administration, the parents completed a standardised questionnaire.

The outcomes were time from lorazepam administration to seizure cessation and the occurrence of any adverse events.

Results: 18 children received SL lorazepam to treat 49 seizures. 26 were prolonged and 23 serial seizures. Lorazepam was given after a median of 5 minutes (range 1–60). 39 seizures stopped after a median of 6 minutes (range 1–75). Seizures recurred in 17 children after a median of 8 hours (range 1–16). 34 of 49 administrations were followed by sleep and 4 by rapid breathing or snoring. No apneas were reported. 16 children visited the emergency department of which 13 were admitted. All parents thought lorazepam was easy to administer.

Conclusion: SL lorazepam is effective in the treatment of prolonged and serial seizures at home. Larger prospective studies are needed. SL lorazepam may be a promising alternative treatment to rectal diazepam.

1. Yager JY, Seshia SS. Sublingual Lorazepam in Childhood Serial Seizures. *AJDC* 1988;**142**:931–2.

G101 MAGNETIC RESONANCE IMAGING IN BENIGN INTRACRANIAL HYPERTENSION IN CHILDREN

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Aim: To evaluate the usefulness of magnetic resonance imaging (MRI) in predicting the presence of elevated intracranial pressure in children with benign intracranial hypertension (BIH); and to systematically assess anecdotal observations of these MRI features also being found in apparently normal children.

Patients and Methods: MRIs of children with BIH (n=22) were compared to MRIs of aged matched controls (n=20). A paediatric neuroradiologist who was unaware of the diagnosis interpreted MRIs.

Results: Mean age in both groups was 8 years. 45% of those in the BIH group had a general anaesthetic, v 55% of the controls. See table. Probabilities when adjusted for general anaesthetic were 0.06 for flattening of the posterior sclera and 0.027 for distension of the perioptic subarachnoid space.

Conclusion: Elevated intracranial pressure produces a constellation of MRI features that can assist in suspecting the diagnosis of BIH in children. However a general anaesthetic may exert its own effect on the MRI. Caution should therefore be given when interpreting these MRI features in children who have undergone imaging under a general anaesthetic.

Abstract G101

Features on MRI	BIH	Control	Sensitivity	Specificity	p value
Flattening of posterior sclera	63%	30%	63%	70%	0.198
Distension of perioptic subarachnoid space	68%	25%	68%	75%	0.063
Intraocular protrusion of prelaminar optic nerve	18%	0%	18%	100%	0.085
Tortuosity of optic nerve	33%	5%	33%	95%	0.101
Empty Sella	27%	5% ¹	27%	95%	0.098