

British Paediatric Association

Annual General Meeting, University of York, 15-19 April 1986

Abstracts for plenary spoken sessions

Clinical features of AIDS in childhood. P Habibi, G Morgan, S Strobel, I Smith, J Wilson, E Brett, H Holzel, and R Levinsky (London).

During the past year we have diagnosed AIDS in four children, two of whom acquired the infection from blood transfusions and two by vertical transmission. Whereas all four children eventually had clinical features of recurrent infections highly suggestive of a major immunodeficiency, three of the four initially presented with a neurological disorder. All children had a history of falling off milestones after 12-18 months, one child had focal fits and developmental delay, another had progressive spastic quadriplegia, whereas the third had global retardation. Two of the children had areas of abnormal density on CT scan. In these two patients very high neopterin levels with very low folate levels were found in their CSF. This suggests that infection with human T cell lymphotropic virus type III results in a derangement of CNS folate metabolism and this could contribute to the neurological features of AIDS.

Medical Research Council childhood leukaemia trial VIII compared with trials II-VII. O B Eden, M P Shaw, J Lilleyman, S Richards, and J Peto, (on behalf of UK Medical Research Council Working Party in Childhood Leukaemia).

In the Medical Research Council UKALL Trials II-VI (1972-79) no apparent improvement in disease-free survival was seen for 1400 patients (<50% dfs at 4 years). UKALL VII Study produced a moderate improvement for standard risk patients but UKALL VIII (831 patients) has resulted in a 20% increase in 4 year disease-free survival for all categories of patients.

Although early, these results are extremely encouraging. Strict protocol compliance, sustained induction with a long course of Asparaginase, maintenance of full systemic treatment during CNS prophylaxis, and the use of sustained maximum tolerated doses of oral mercaptopurine and methotrexate during remission maintenance may be

responsible. This large cohort of patients given very consistent therapy is enabling us to define specific risk categories for haematological and CNS relapse. Such patients are earmarked for specific intensification of treatment (already commenced on UKALL X).

Morbidity and mortality secondary to therapy (eg pneumonitis, encephalopathy and coagulopathies) can and must be minimised by good clinical care especially in low risk patients with greater than 80% 4 year disease-free survival.

The prevalence of *Chlamydia trachomatis* infection in infants following maternal infection. P M Preece, J H Brooks, J M Anderson, and R Thompson (Wolverhampton).

Pregnant women were screened prospectively for *Chlamydia trachomatis* infection at delivery using a monoclonal antibody test to detect Chlamydia antigen from cervical swabs. Fifty eight women were positive amongst 1074 screened (5.4%).

The infection was acquired by 47% of infants of Chlamydia positive mothers, by three weeks of age. In 64% of Chlamydia positive infants infection was detected in pharyngeal aspirate, 30% from both conjunctival swabs and pharyngeal aspirate and 6% from conjunctival swabs only.

Conjunctivitis was apparent in 31% of Chlamydia positive infants including all but one with positive conjunctival swabs. Of Chlamydia negative infants, 21% suffered conjunctivitis but this was usually less severe. Pneumonitis occurred in 12.5% of Chlamydia positive infants and none of the negative infants. In total 43.5% of Chlamydia positive infants were symptomatic. Thus 17/1000 infants, delivered at a district general hospital, suffered symptomatic Chlamydial infection. The implications for screening programmes will be discussed.

Airway responsiveness in wheezy infants: protective effect of nebulised bronchodilator. A Prendiville, S Green, and M Silverman (London).

Although wheezy infants are clinically unresponsive

to bronchodilators, recent studies have suggested that both airway smooth muscle and beta-receptors are present. The response to nebulised salbutamol 2.5 mg on the bronchial response to histamine challenge was studied in five infants with recurrent wheeze. A saline control was administered on a separate day. Histamine responsiveness was measured after the administration of doubling concentrations of nebulised histamine solution, as the concentration producing a 30% fall (PC_{30}) in maximum flow at functional residual capacity.

	Mean PC_{30} (g/l)	
	Before	After
Saline	1.03	0.51
Salbutamol	0.57	> 8

The airways of these infants were responsive to low concentrations of histamine. Airway responsiveness to histamine (up to 8 g/l) was completely abolished after nebulised salbutamol. Thus the airways of wheezy infants *do* have the capacity for reversible narrowing and *do* respond to beta-2-adrenergic drugs.

Ultrasound in the screening and management of hip displacement. L Berman (Harrow).

The incidence of established dislocation has risen despite the introduction of clinical screening in the sixties. In one study the incidence of late dislocation appears to have been reduced but at the expense of splinting ten infants for each one actually requiring the treatment, as the unstable hips that resolve spontaneously cannot be distinguished clinically from those that progress to established dislocation.

Ultrasound images the unossified hip and clearly demonstrates the relationship of the femoral head to the acetabulum. The examination provides information hitherto available only from contrast arthrography and is performed in seconds. It is, therefore, a feasible screening method.

The results of a pilot study are presented where ultrasound is compared with clinical screening in 1000 neonates. The procedure resulted both in the treatment of clinically stable hips and prevented unnecessary treatment in babies with a positive Ortolani test but normal ultrasound appearances.

A scheme of management is proposed utilising this newly available information.

Study of the effect of oligoantigenic diets in severe atopic eczema. M G Pike, C M Carter, J F Soothill, and D J Atherton (London).

A number of studies, both open and double-blind, have demonstrated that the exclusion of cow's milk and egg is beneficial in some children with atopic eczema. We have investigated the therapeutic value of a broader dietary approach in order to define the range of foods that can provoke the disease in individual children.

Sixty eight children aged 7 months to 17 years were put on 'oligoantigenic' diets comprising only a few foods each considered unlikely to play a provocative role. The state of their eczema was monitored using diary cards at home and a visual scoring system in the clinic. In those who improved on the oligoantigenic diet foods were then re-introduced serially at weekly intervals; foods which produced an exacerbation when re-introduced were permanently excluded. A double-blind cross-over design was used to validate the patient's identification of provoking foods.

Seventeen children were judged to have maintained a worthwhile improvement as a result of this dietary regimen. Double-blind food challenges indicated that the identification of provoking foods is unreliable using this method.

The search for clinical and in vitro predictors of dietary responsiveness will be discussed.

Duodenal ulceration in 110 children. S Murphy, E J Eastham, R Nelson, and R H Jackson (Newcastle upon Tyne).

Since 1960, 110 children have presented with duodenal ulceration—63 being diagnosed by barium meal and 47 by upper GI endoscopy. Mean age at diagnosis was 11.2 years, but 46% had symptoms before their tenth birthday and the mean age at first symptom was 9.4 years. Nocturnal pain (61%), periodicity (71%) and a family history (62%) were the commonest symptoms. Although epigastric pain (52%) was the predominant site, central pain was common (36%) and often not dyspeptic in nature—only 33% obtaining relief from antacids. A history of bleeding occurred in 33% and there were no perforations.

Thirty four children had received H₂-antagonists, but there is a high (70%) relapse rate within 6 months and long term maintenance may be necessary. Fifteen children have required surgery for persistent symptoms.

Upper GI endoscopy has proven a safe and invaluable procedure when investigating patients with recurrent abdominal pain—other pathologies,

which would not have shown on barium studies, often being found, eg mild oesophagitis, bile reflux gastritis and duodenal Crohn's disease.

Are major cardiac defects invariably recognised in the newborn infant? K A Hallidie-Smith and P Morais (London).

Examination of the heart is recognised as being an important component of the examination of the newborn infant. However, the trend to earlier discharge during the period of potential functional ductus patency could cause difficulties in assessment.

We reviewed the records of 200 consecutive admissions of UK born neonates who were found to have major cardiac anomalies leading to urgent surgery or death. Sixty four (32%) had been sent home as having normal hearts between the ages of 24 hours and 10 days (mean 3.9 days). They were admitted 1–29 days later and urgently transferred within 24 hours. Twelve infants collapsed at home; most re-presented for multiple reasons of which poor feeding (41) was the most common. On transfer 39 were in severe heart failure and 10 centrally cyanosed. All 64 had abnormal breathing patterns and abnormal second heart sounds; those in failure had a loud gallop. Only 4 had loud systolic murmurs. The most commonly missed malformations were coarctation of the aorta (17) and hypoplastic left heart (12). While delayed diagnoses were made in cyanotic infants with TAPVD (4), pulmonary atresia (4), and single ventricle (5), simple transposition infants were referred early and directly.

It is concluded that many major cardiac defects are difficult to diagnose in early neonatal life, particularly during ductus patency, and that many such infants pass as normal. The feeding history is particularly relevant and the absence of murmur does not preclude a potentially fatal cardiac defect. A greater level of awareness of this possibility by both hospital and home medical and nursing staff could lead to earlier diagnosis which in some instances could enhance the infant's chances of survival.

Delayed consequences of bone marrow transplantation for the treatment of acute leukaemia in childhood. M Nicholls (Sutton).

Bone marrow transplantation for the treatment of patients with acute leukaemia is resulting in an increasing number of children who are likely to have

been cured. This makes the long term effects of the treatment of increasing importance.

In a retrospective study, 30 children transplanted between 1976 and 1984 (mean 4 years), aged 3–16 years at the time of bone marrow transplantation, were assessed with regard to their growth and pubertal development. Twenty-seven patients received total body irradiation (10 Gray) prior to transplant and 3 received Melphalan alone (240 mg/m²).

A decrease in growth velocity was not invariable, however measurements of standing and sitting heights revealed a proportionately short spine in over 75% of the children.

Only 1 of the 12 boys had significantly delayed pubertal development and he had had previous testicular irradiation. However, all the girls in the early stages of puberty at the time of bone marrow transplantation following conditioning with 10 Gray total body irradiation, have required oestrogen replacement therapy for satisfactory development. One girl who was prepubertal at the time of treatment has reached menarche spontaneously and now has normal pubertal development for her age. Two girls having had conditioning with only high dose Melphalan have normal ovarian function.

Further follow-up data will be presented and the significance of these findings discussed.

Clinical recognition of child sexual abuse. J Wynne, C Hobbs, and N Wild (Leeds).

During the last five years there has been greater awareness of the prevalence of child sexual abuse within the UK. Increasingly paediatricians are in a position to recognise this abuse in their own general paediatric practice, but also in selected groups of children eg physically abused children or in children referred because of anxiety of other professional groups.

In Leeds the number of children seen annually by the Child Abuse Team because of possible sexual abuse was less than 10 per year until 1984 when 50 children were seen. In 1985 there have been 156 referrals, 113 girls and 43 boys. The average age of the children was 8 years. A definite diagnosis of sexual abuse was made in 104 children.

This paper will discuss the clinical presentation, history taking (including the use of anatomically correct dolls) physical examination and use of laboratory investigation in these first 200 children. Difficulties in diagnosis will be discussed.

Results clearly emphasise and re-inforce the current concept that child sexual abuse is common, it is underdiagnosed and the slogan 'Believe the child—fact not fantasy' is apt.

Acute lymphoblastic leukaemia (ALL) in childhood: the medical cost of cure. K Wheeler, J M Chessells, and L Jannoun (London).

Children with ALL in first remission more than 6 years after diagnosis have a greater than 90% chance of continued remission and 'cure'. We have examined the outcome in a cohort of 378 children diagnosed at the Hospital for Sick Children during a 10 year period (1970–1979). A minimum of 6 years later, 202 of these children (53%) were alive, 140 (37%) still in first remission and 62 (16%) having experienced at least one relapse.

The major problems observed in the 140 long term disease-free survivors were of two main types.

1. Post infective: with 2 cases of severe scarring secondary to pseudomonas and varicella infections; 2 cases of persistent middle ear disease and 1 child blind, deaf and growth-retarded following cytomegalovirus infection.

2. Neuropsychological: problems in this area revealed the main cause for concern. Thirty two of 140 children (23%) had experienced significant learning problems, 5 being severe enough for special schooling and 4 associated with additional medical problems. The other 23 children required remedial teaching. IQ assessment did not differentiate between those with or without schooling problems.

By contrast growth and endocrine problems were minimal, with no cases of pubertal delay.

In summary, although the majority of these long term survivors have no residual problems there is a price to pay: only 6% have major handicaps but some minor degree of disability is seen in about a third of the patients.

Mortality from whooping cough is greater than we think. A Nicholl and A Gardener (Nottingham and London).

Whilst the whooping cough epidemics since 1976 have resulted in massive morbidity certified fatalities have been rare. However the disease can be difficult to diagnose in babies and it has been suggested that an excess of infant respiratory deaths in the late 1970s was due to cases of undetected pertussis. Similar arguments could equally apply amongst cot deaths.

This possibility was investigated epidemiologically using routinely collected post-perinatal infant death returns for England and Wales for the period 1968–84. After combining deaths from accidental asphyxia, respiratory causes and sudden infant death a temporal association was demonstrated between the recrudescence of whooping cough and a cessation in a previous downward trend in mor-

tality. The trend only resumed in 1983–4 when whooping cough notifications returned to their pre-1977 level.

Over the period 1977–83, 51 fatalities were associated with pertussis on death certificates. The model presented estimates an additional 100–500 (depending on the assumptions made) infant deaths resulted from pertussis during the same period.

Improving health care delivery in an inner-city well baby clinic. J James, C Clark, and M Rosedale (Bristol).

We have adopted a new format for running our Inner-City Well Baby Clinic in Bristol. A quarter of the patients are members of an ethnic minority group (compared with 5% in Bristol). They are principally West Indian, but include patients from the Indian sub-continent and Vietnam. One third of all the children are from single parent families.

The *health care delivery problem* has been poor clinic attendance and poor uptake of immunisations and screening procedures. Ethnic minority groups were particularly poor attenders.

The new system was introduced in 1982 and consists of an '*open access*' clinic. The Clinical Medical Officer is a G.P. in the Health Centre, so works closely with the Health Visitors. All children are welcomed to the clinic. Where necessary, medication is prescribed and advice given. G.P. and Well Baby notes are combined; *opportunistic screening* is thus possible in surgery time. We have introduced a credit card sized 'Baby Card', bearing the child's photograph; all necessary checks are printed on the card and recorded with a punch. After each clinic the Health Visitors and Doctor meet to discuss any problems.

Over the first 3 years, immunisation rates have increased by 16% (88% of children receive immunisations on schedule) and attendance has increased by 44%. Ethnic minority groups are enthusiastic attenders (we have diagnosed 7 cases of nutritional rickets in Rastafarian children).

We have established credibility with patients by staffing the clinic with a G.P. and attached Health Visitors, and by making available a *therapeutic service* in association with a *preventative service*. Health care delivery has been improved.

Vitamin E protects against periventricular haemorrhage in preterm babies. M L Chiswick, S Sinha, J Davies, and D G Sims (Manchester).

We studied 226 newborn babies, ≤ 32 w gestation (inborn 145; outborn 81), who were admitted to the Neonatal Medical Unit from January 1984 to

September 1985. Immediately after birth (inborn), or when requested to transfer a baby (outborn) each baby was randomly allocated to a vitamin E treated or control group. Treated babies received three IM doses of 20 mg/kg vitamin E (alpha tocopherol acetate) at 24 hour intervals commencing soon after birth or on admission to the referral centre. Ultrasound brain scans, stored on video-tape were carried out on admission to the unit, daily during the first week, and 2–3 times weekly thereafter.

Among treated inborn babies there was a striking reduction in the incidence of intraventricular and cortical haemorrhages (9.1%), compared with the control babies (40.0%) ($P < 0.001$). Treated outborn babies also had a significantly reduced incidence of haemorrhages (15.0%) compared with controls (48.0%) ($P < 0.01$). Multivariate analysis of different clinical events implicated in the pathogenesis of intraventricular haemorrhage confirmed an independent protective effect of vitamin E ($P < 0.01$).

The dose of vitamin E used achieved a mean peak tocopherol level of 3.0 mg/dl on day 3 (versus 0.44 mg/dl in controls), and was also associated with a significantly reduced susceptibility of RBC's to haemolysis in dilute hydrogen peroxide. We observed no side effects attributable to vitamin supplementation.

Iron therapy increases the rate of weight gain and psychomotor development of anaemic toddlers: a double blind randomised controlled trial. A Aukett, Y A Parks, P H Scott, and B A Wharton (Birmingham).

Previous work at this hospital and elsewhere has shown that anaemia in toddlers is common and is associated with psychomotor delay. However, it seemed unclear whether this association was cause and effect or merely due to the same underprivileged environment. A double blind randomised intervention study was therefore performed.

Four hundred and seventy children aged 17–19 months living in inner Birmingham had a haemoglobin estimation. Twenty five per cent had a Hb < 11 g/dl. Following an initial haematological, anthropometric and developmental assessment 97 of these anaemic children (Hb 8–11 g/dl) received either Iron 24 mg and Vitamin C 10 mg daily or Vitamin C only (control group) for two months and were then re-assessed.

The children who received iron had an increased rate of weight gain (mean \pm SD: 10.0 g/day \pm 6.0 cf 5.7 g/day \pm 6.0 $p < 0.005$) and more of them achieved the expected rate of development (31% cf 12% $p < 0.05$).

Whilst iron deficiency anaemia is unlikely to be

the only factor in the slower development of children living in underprivileged circumstances it can at least be easily identified and treated. Routine Child Health Surveillance in such areas should include haemoglobin determination.

Neonatal brain haemorrhage, ischaemia and outcome in VLBW infants. R W I Cooke (Liverpool).

The outcome of VLBW infants closely relates to perinatal brain injury. Cranial ultrasound scanning detects both haemorrhagic and ischaemic lesions in the neonatal period. Many follow-up series to date have been too small to allow outcome to be reliably associated with specific ultrasound appearances.

Seven hundred and ninety eight VLBW infants admitted to the Mersey NICU were scanned during the neonatal period. Five hundred and twenty nine survived to be followed up between 1 and 5 years later. Nine are abnormal because of dysmorphic syndromes or post-neonatal insult. Four hundred and fifty one are developing normally and sixty nine have neurodevelopmental sequelae (18 cerebral palsy alone, 28 moderate delay \pm CP, 23 severe delay \pm CP). US evidence of both haemorrhage and ischaemia related significantly to outcome with high specificity and efficiency. The sensitivity of ischaemic changes as a predictor was greater. Bilateral ischaemic changes were almost invariably associated with poor outcome.

A highly significant relationship between degree of haemorrhage and extent of later ischaemic lesions was observed, suggesting a possible causal relationship and area for prevention.

Death as an option in neonatal intensive care. A Whitelaw (London).

Despite criticism from paediatricians and parents, recent legislation in the USA has insisted that infants with severe handicap should receive full medical support without regard to the quality of life preserved. Many paediatricians believe that there are circumstances, apart from formal brain death, when infants should be allowed to die without intensive care or surgery prolonging life.

This paper reviews a four year period in a regional neonatal intensive care unit and considers the infants for whom withdrawal of support was discussed as a possible option. The infants could be broadly grouped into a) severe congenital abnormalities, b) extreme immaturity, c) acquired severe brain damage. Forty six infants were considered. Discussion demanded accurate diagnosis and prognosis and involved all the medical and nursing staff caring for the child. A decision to withdraw treatment had

to be unanimous and was usually based on a practical certainty, not just of handicap, but of total incapacity eg microcephaly, spastic quadriplegia and cortical blindness. When medical staff and parents cannot agree on such decisions, a broader but still sensitive approach is needed to avoid prolonged suffering and wastage of resources.

Should neonatologists be more concerned over the anaesthetic management of preterm neonates subjected to ligation of patent ductus arteriosus? K J S Anand and A Aynsley-Green (Oxford and Newcastle upon Tyne).

Analysis of 40 papers describing current operative management of PDA ligation shows that most infants are given during surgery either curare alone or minimal anaesthesia with nitrous oxide. We report measurements of metabolic and hormonal variables in 16 preterm neonates undergoing PDA ligation in a randomised trial to compare the effects of giving nitrous oxide with or without fentanyl (F). Blood samples were drawn pre-op, end-op, 6, 12, and 24 hours post-op. The infants given F demonstrated significant suppression of the substantial stress response seen in infants not given F, with respect to the magnitude of the perioperative changes in blood concentrations of glucose, lactate, pyruvate, acetoacetate, adrenaline, glucagon, aldosterone, corticosterone, 11-deoxycorticosterone, 11-deoxycortisol and the insulin/glucose ratio. Infants given F required less post-op analgesia and appeared to be more stable clinically with fewer complications. Neonatologists should pay attention to the anaesthetic and analgesic management of high risk infants subjected to surgery since manipulation of therapy may improve outcome.

Cerebral artery Doppler ultrasound predicts outcome in perinatal asphyxia. L N J Archer, D H Evans, and M I Levene (Leicester).

This study attempted to assess the value of continuous wave Doppler ultrasound examination of the anterior cerebral arteries in prediction of neuro-developmental outcome in asphyxiated full-term infants. Pourcelot index (PI) was automatically calculated from the maximum frequency envelope of 20

consecutive cardiac cycles and the normal range derived from 49 normal full-term infants. Forty two infants with evidence of intrapartum asphyxia were sequentially studied. These comprised 34 with clinical features of post-asphyxial encephalopathy (PAE) and eight babies with depressed Apgar scores but no subsequent encephalopathy. No normal baby had a PI value below 0.55. Low values were seen in one (out of eight) with low Apgar scores, 1/15 with mild, 6/13 with moderate and 4/6 with severe PAE. All infants with PAE have been followed up, median 14 months (range 3–27), and no infant with normal PI values has neuro-developmental abnormality. Haemodynamic processes underlying a low PI in PAE are not clear but a normal PI is a good prognostic sign even in severe PAE and is detectable within a few days of birth. Cerebral Doppler ultrasound may have an important clinical role in predicting outcome in severely asphyxiated infants.

The need to monitor changes in child health and illness. M E J Wadsworth (Bristol) (MRC National Survey of Health and Development).

Most countries carry out regular surveillance of the health of their child populations through the collection and publication of mortality rather than morbidity data. But there is increasing evidence that secular changes in prevalence of certain childhood illnesses need to be monitored.

Evidence comes from comparisons of one-off studies of particular conditions, from the three British national birth cohort studies of children born in 1946, 1958, and 1970, and from comparison of the cohort born in 1946 with their first born offspring. This paper presents data to show the surprising scale and extent of change in prevalence of a number of conditions, amongst them asthma, accidental injury and obesity, as well as in the proportions of children admitted to hospital.

It is suggested that morbidity monitoring should be carried out based on sample populations and that three aspects of morbidity should be investigated. Regular monitoring should be carried out, first of selected disorders, such as diabetes, second of measure of capacity, function and state, and third of the associations between social and family circumstances and child health.