PostScript

LETTERS

A new urine collection method; pad and moisture sensitive alarm

Urine collection pads (UCPs) are a non-invasive and easy method of sampling urine from young children still in nappies to diagnose or rule out urinary tract infection (UTI).¹⁻³ However, our previous study⁴ showed a high rate (27%) of sample contamination ($>10^5$ mixed growth organisms/ml) by faecal/perineal flora, making interpretation difficult. We hypothesised that reducing the contact time between urine soaked UCP and perineum might reduce this. We therefore devised a new method using the UCP, incorporating the sensor of a personal enuresis alarm buried in its matrix,⁵ so that the presence of urine in the UCP is signalled, allowing removal of the UCP as soon as urine is passed.

We conducted a randomised trial to compare the contamination rate ($>10^5$ mixed growth organisms/ml) of urine obtained from UCPs (checked for urine every 15 minutes) or UCPs incorporating an enuresis sensor (Ferraris fx2000). Febrile children under age 2 (urine sample required to rule out UTI) were randomised to the two collection methods. Urine was aspirated from the UCP using a 20 ml syringe and sent for routine culture. The local research ethics committee approved the study. Consent was obtained from parents.

A total of 91 children were recruited. Pads visibly soiled with faeces were discarded. A total of 71 samples were successfully obtained for culture (UCP 37, UCP/alarm 34). UTI occurred in 7% (5/71). The incidence of heavy mixed growth ($>10^5$ organisms/ml) was similar in both groups; UCP 21% (7/34) and UCP/alarm 22% (7/32); odds ratio 1.08 (95% CI 0.3 to 3.5). There were no adverse effects from the alarm and only one false alarm.

Our new UCP/alarm method did not reduce the likelihood of bacterial contamination of the sample. There remains a high rate of contamination by skin and faecal flora inherent in both UCP methods, which is higher than the clean catch method (12%) in our previous study.⁴ It seems likely that simple contact of the pad with the perineal skin influences the risk of contamination, irrespective of whether the UCP is wet or not. Further work to address this is in progress.

The main benefit of our new UCP/alarm method was its ease and speed of use. The conventional UCP method is already popular with parents.³ Our UCP/alarm method was preferred over the conventional UCP method, because the alarm immediately signals the presence of urine in the UCP and reduces the need to disturb the child for frequent checking of the pad.

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Lean body mass in children with cystic fibrosis

Poor nutritional status adversely affects long term survival of patients with cystic fibrosis (CF).¹ Body composition measured by dual energy x ray absorptiometry (DXA) has been shown to correlate well with other established techniques such as bioelectric impedance analysis and total body potassium estimation.² This study was designed to compare the whole body and regional bone mineral density of children with CF with that of controls, the results of which have been reported previously.³ Here, we present the results of post hoc comparison of DXA measured whole body lean body mass (LBM) in 28 patients with CF (aged 5-16 years) and 49 healthy gender, age, height, weight, and pubertal stage matched controls. Hologic QDR 4500 Acclaim DXA scanner (Hologic Inc., Waltham, MA, USA) in conjunction with the V8.24a:3 software was used for whole body LBM measurements. The short term in vivo precision for total body LBM in adults is 1.75%. Disease severity in cystic fibrosis patients was estimated by the Shwachman Kulczycki (SK) score. The study design, recruitment of subjects, and anthropometric measurements has been described previously.³

We have previously shown that age, height, weight, body mass index, LBM, and fat body mass of subjects in the CF and control groups were not different.³ However, as shown in fig 1, the difference in LBM between CF patients and controls (LBM of CF patients minus LBM of age and gender matched controls) declined with age (slope -0.33; 95% CI -0.62 to -0.04; $p = 0.028$). In other words, the older CF patients had lower LBM in comparison to

Figure 1 Difference in LBM between CF patients and controls (LBM of CF patients minus LBM of age and gender matched controls), plotted against age.

healthy age and size matched controls. An inverse relation was observed between SK scores and age in CF subjects ($r = -0.39$, $p < 0.05$), indicating that older CF patients had more severe disease compared to the younger patients. Taken together, these data suggest that in CF patients the disease severity worsens with age, and this in turn is associated with the decline in LBM. Alternatively, the observed reduction in LBM and lower SK scores in older patients might be due to a cohort effect, as the eldest patients were born almost 10 years earlier than the youngest patient, during which period significant advancements have occurred in the care of CF patients. Our data are potentially important, as poor nutritional status is known to adversely affect survival of CF patients,¹ and changes in body composition are known to predate deterioration in traditional anthropometric indices of nutrition.⁴ A prospective longitudinal study is required to confirm our finding that LBM declines with age and/or worsening disease severity, and to evaluate its impact on morbidity and long term survival in CF patients.

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Haemolytic anaemia associated with high dose intravenous immunoglobulin therapy in a child with Guillain-Barré syndrome

We report a case of severe haemolysis in a patient who received high dose immunoglobulin therapy. A 4 year old, 16 kg boy,

with AB Rhesus positive blood, was admitted to our intensive care unit with Guillain-Barré syndrome. Rapid progression to respiratory failure and abnormal deglutition were observed. Mechanical ventilation had to be initiated a few hours after admission. Human immunoglobulin (Tegeline; 1 g/kg/day) was administered for five days. Two days after completion of the therapy, erythrocyte count and haemoglobin fell from 4.91×10^6 g/l to 1.76×10^6 g/l and from 125 g/l to 47 g/l, respectively. Bone marrow aspiration was normal. Haptoglobin was <0.1 g/l. Schizocytes were present in the peripheral blood smear. Further examination revealed the presence of anti-A and anti-B antibodies and positive direct Coombs test. Allo-antibodies anti-A and anti-B were detected in samples from all the lots of immunoglobulin given to this patient. Their titres ranged from 4 to 8 IU/l (usual titres <64 IU/l).

A transfusion of 250 ml of packed red cells increased haemoglobin to 80 g/l. Muscular function improved progressively and tracheal extubation was performed 10 days after the beginning of therapy. A few days later, the patient was discharged from the intensive care unit.

As previously reported by other authors,¹⁻⁴ our patient received a high dose of immunoglobulins, and direct antiglobulin testing implicated antibodies to the patient's own blood type. Patients with AB blood are at risk of haemolytic anaemia following immunoglobulin therapy.^{1,2} Although modern products often contain only low level of anti-A and anti-B antibodies, physicians should be aware of this potentially adverse reaction when prescribing high dose immunoglobulins, particularly in patients with AB blood groups.

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BOOK REVIEW

Cracked

Lynsey Calderwood, Jessica Kingsley Publishers, 2002, £13.95

Cracked is a personal account written by someone who had a traumatic brain injury aged 14 years, in 1992. She was left with no physical scars, but with a complete loss of memory. What Lynsey well describes is the feeling of loss of identity, the feeling that she is trapped in someone else's body, and that her family is not her own; this is particularly well accentuated by the use of the definite article, as in the mother, the father, the sister, etc. However, it is her relationship with health professionals, education, and most particularly her peers which are the most frightening and insightful aspects of this book.

Initially the book's emphasis is on the author's loss of her own identity. She says that she feels that her own date of birth is the date of her accident, as she has no memories or recollection of her life prior to it. There is also a wish to be as good as the old Lynsey, her family's old daughter.

She next describes her medical care: after an initial stay in the neurosciences department, she is sent off to a behavioural unit; here she is with what she describes as "all the problem cases under the sun". The use of different fonts, and even in some patches obviously poorly constructed sentences are all there to give a feeling of the author's confusion at what was going on around her. However, here she is befriended by a couple of her fellow inpatients who re-teach her the basics of reading and writing. Finally she gets seen by a specialist who diagnoses her as having retrograde anterograde post traumatic (RAPT) amnesia, and who advises admission to her adolescent unit. Here again there were patients with a huge variety of diagnoses, from anorexics, to drug addicts, to the author. She describes the psychiatric therapy, but more clearly described is the bullying, and the start of a descent into an eating disorder behaviour.

Finally she went back to school. Here there appears to have been virtually no support. There was no idea of the problems that she had with amnesia and the impact that that would have on her learning. But more significant was the bullying and hostility, which finally led to her being assaulted.

She was sent to a new school two towns away where no-one knew "the old Lynsey". Here she developed new friends, and had a much reduced timetable.

The remainder of the book is about a slow but steady improvement in her life. It is about the way she has slowly rebuilt her life, by going to college, getting involved in creative writing, and by slowly discovering her own identity. These have been punctuated by problems: her descent into anorexia, and then exercise addiction, to a highly immature sexual identity.

This is a highly personal book, written entirely from the perspective of a girl who suffered a traumatic brain injury. It is about having a hidden disability, about feeling a stranger in your own body, and with your own family. It is a book which should give hope to people that they can rebuild their lives following such a significant injury, but that problems will still remain. However, Lynsey had her brain injury in 1992, and certainly the medical treatment/therapy input, is totally different to what is carried out at Chailey Heritage today. Also it is our experience that the education

authorities are more supportive than the ones described. However, I am sure the prejudices, and the stigma described are still present. The author is a talented writer; however, the most personal bits are the poems which frequently intersperse the book. Also the use of fragments of *Alice in Wonderland* add poignancy to the chapters. The part which is written with Alice as the first person is probably the most personal and poignant part of the book.

Certainly this book is to be highly recommended to anybody who works with children with traumatic brain injuries. It should also be recommended to families, with the proviso that in the past 10 years treatment, therapy, and most importantly care, has changed and hopefully improved.

J P Wright

CORRECTION

In the *Arch Dis Child* supplement I of this year (published in April), the following abstract was not published. It should have replaced abstract G24.

Meat consumption during weaning is positively associated with psychomotor outcome in children under 22 months of age. J.B. Morgan¹, A. Taylor¹, M.S. Fewtrell².

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Aims: The impact of specific weaning foods on later health outcomes has been poorly studied. We aimed to determine if meat consumption and milk feeding patterns influence neuro-cognitive outcome and growth in infants under 24 months of age.

Methods: In a longitudinal cohort study, 144 full term infants (breast and formula fed) were recruited at four months. Their red and white meat consumption was recorded in sequential seven day diet diaries at 4, 8, 12, 16, 20, and 24 months. Neuro-cognitive outcome (psychomotor developmental indices, PDI, and mental developmental indices, MDI) derived from the Bayley Scales of Infant Development II was measured at 22 months. Growth data were collected at the same census points as the dietary data.

Results: Meat intake from 4-12 and 4-16 months was positively and significantly related to PDI ($p < 0.02$ and 0.013 , respectively) but there was no association between milk feeding and PDI, nor any interaction between meat intake and milk feeding. Conversely, breastfeeding was positively and significantly related to MDI ($p < 0.01$) but there was no association between meat intake and MDI, nor any interaction between milk feeding and meat intake. These findings remained after adjustment for potential confounding factors. Meat intake from 4-12 months was positively and significantly related to weight gain ($p < 0.05$); further analysis suggested this association was mediated via protein intake. There was no interaction between meat intake and milk feeding on growth.

Conclusion: Meat in the weaning diet may positively influence psychomotor development at 22 months, possibly due to an effect of specific nutrients such as iron or long chain polyunsaturated fatty acids. Meat intake, via its effect on protein intake, is also associated with increased weight gain up to 12 months. These findings highlight the need for further investigation of the weaning diet in relation to health outcomes.