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The editors will decide, as before, whether to also publish it in a future paper issue.

LETTERS

Calibration of the paediatric index of mortality in UK paediatric intensive care units

Pearson et al should be congratulated on successfully collecting the data required for calculating the PIM Score on 7253 children admitted to 5 UK paediatric intensive care units (PICUs).1 It is reassuring to note that the authors did not find any systematic differences between these five units in terms of their standardised mortality ratios. Leaning on the controversies involved in cross country comparisons, it is further pleasing that they appear to conclude that mortality following admission for paediatric intensive care in 1994–95 was less than it was in 1994–95.2 The current results imply that 78 more children have survived following treatment in these 5 PICUs than were predicted by the 1994–99 PIM derivation model.

Before this can be considered a major clinical advance, it is important to consider the health status of the additional survivors. Very different conclusions might be drawn if the additional children who survived have a very poor health status than if they have a very good health status.

The United Kingdom Paediatric Intensive Care Outcome Study (UK PICOS) was set up in response to the “Paediatric Intensive Care: A framework for the future” document and a joint United Kingdom Medical Research Council and Department of Health working paper.3 Both these publications recognised that, as mortality following paediatric intensive care is less than 10%, morbidity or health status may be a more important outcome of paediatric intensive care than mortality. UK PICOS is currently collecting health status measurements of children who survive following admission for paediatric intensive care in a representative sample of 21 UK PICUs. By seeking to differentiate between the survivors of paediatric intensive care, UK PICOS may lead to a risk adjustment model for health status in addition to mortality. Furthermore, UK PICOS has the potential to provide the methodology to enable cost effectiveness studies to be set up in paediatric intensive care. In the longer term this will allow organisational structures, service management, and new interventions in paediatric intensive care to be evaluated in a more rigorous manner than at present. Further details of UK PICOS are available at www.shef.ac.uk/~schart/ukpicos.

G Parry
School for Health and Related Research, University of Sheffield, Regent Street, Sheffield S1 4DA, UK
G.parry@sheffield.ac.uk

S Jones
Project Manager, UK PICOS
M Simic-Lawson
Intensive Care National Audit & Research Centre
London WC1H 9HR, UK

References

Calibration of the paediatric index of mortality score for UK paediatric intensive care

Pearson and colleagues have presented data highlighting the use of the paediatric index of mortality (PIM) score as a tool for auditing paediatric intensive care unit (PICU) performance.1 Whilst we would agree with the authors’ message that PIM has many advantages over other scoring systems, we feel that this study highlights some important drawbacks to the use of PIM.

The median score of 0.10–0.11 for children who died and children who survived, with an area under the ROC curve of 0.84, is reassuring to note that the authors did not find any systematic differences between these five units in terms of their standardised mortality ratios. Leaning on the controversies involved in cross country comparisons, it is further pleasing that they appear to conclude that mortality following admission for paediatric intensive care in 1994–95 was less than it was in 1994–95.2 The current results imply that 78 more children have survived following treatment in these 5 PICUs than were predicted by the 1994–99 PIM derivation model.

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G Parry
School for Health and Related Research, University of Sheffield, Regent Street, Sheffield S1 4DA, UK
G.parry@sheffield.ac.uk

S Jones
Project Manager, UK PICOS
M Simic-Lawson
Intensive Care National Audit & Research Centre
London WC1H 9HR, UK

References

Authors’ reply

Dr Tibby and Dr Murdoch note that, in our study of paediatric intensive care units (PICUs) in the UK,4 PIM discriminated well between children who died and children who survived, with an area under the ROC curve of 0.84. However, they are concerned that PIM had “poor calibration” because the standardised mortality rate (SMR) in the UK units was 0.87 (95% CI 0.81–0.94)—that is, the actual number of deaths was only 87% of the number predicted by PIM. In fact, this figure is almost identical to the PIM SMR for all PICUs in Australia in 1997–99, where the SMR was also 0.87 (95% CI 0.81–0.92). It is very encouraging that PIM gives such similar results in Australia and the leading PICUs in the UK, as it suggests that standards are comparable between the two groups of units and that PIM performs similarly in Australian and UK children.

It is normal for SMRs to fall with time as intensive care improves, and for mortality prediction models to need recalibration. This has happened with PRISM,5 MPM4 and APACHE,6 as well as PIM. Despite Dr Tibby and Dr Murdoch’s reservations, the fact that the SMR has fallen by a similar amount in both Australia and the UK suggests that standards of care have improved in PICUs in those countries in recent years.

Dr Tibby and Dr Murdoch point out that the Hosmer-Lemeshow test gives a low p value for
PIM’s performance in the UK data. This test divides the sample into 10 groups, ranging from very low to very high risk of death, and compares the actual number of survivors and non-survivors in each group with the number predicted by PIM. Because PIM predicts too many deaths in the leading units in the UK, it follows that the number of actual deaths differs from the number predicted—so the Hosmer-Lemeshow p value is low. However, table 2 in our paper shows that the ratio of observed to expected deaths was similar across the 10 groups, so that the recalibrated model is likely to fit well. The fact that the Hosmer-Lemeshow test gives a low p value does not necessarily mean that a model (such as PIM) is invalid—it often means only that the standard of care in the test PICUs differs from that in the units in which the model was derived.

The PICUs that contributed the data from which the PIM score was derived were all leading units that deliver a high standard of care, so the score reflects best practice in 1994–96 when the data were collected. We are recalibrating PIM using data from units in the UK and Australia, and the new model will be available this year. Unfortunately, the quality of paediatric intensive care is not uniform in the UK and Australia, and the new model will be recalibrating PIM using data from units in the UK (PICOS). The UK should aim for an international standard based on best practice rather than being content with average practice.

F Shann
Royal Children’s Hospital,
Parkville, Victoria 3051, Australia
G Pearson
Birmingham Children’s Hospital,
Steelhouse Lane, Birmingham B4 6NH, UK
Gale.Pearson@bhamchildrens.wmids.nhs.uk

References

Long term results of lung resection in cystic fibrosis patients with localised lung disease
We have previously reported favourable short term outcomes following lobectomy in six children with cystic fibrosis and severe localised bronchiectasis (range 6 months to 6 years post-operation). Prior to surgery all had significant respiratory symptoms despite aggressive conventional treatment, including frequent courses of intravenous antibiotics. Computerised tomography and ventilation scans showed severe localised disease with little or no evidence for bronchiectasis elsewhere. Lung function was maintained or improved in all but one case from six months post-surgery, and all had improved symptoms.

Table 1
Lung function data: simple spirometry after bronchodilator inhalation

<table>
<thead>
<tr>
<th>Case</th>
<th>FEV₁ (% of predicted)</th>
<th>PVC (% of predicted)</th>
<th>Number of years followed up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preop Postop (6 mth)</td>
<td>Long term follow up</td>
<td>Preop Postop (6 mth)</td>
</tr>
<tr>
<td>1</td>
<td>60 75 60</td>
<td>76 87 81</td>
<td>60 76 87 81 4</td>
</tr>
<tr>
<td>2</td>
<td>85 76 87</td>
<td>94 91 5</td>
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</tr>
<tr>
<td>6</td>
<td>83 83 60</td>
<td>77 83 58 9</td>
<td>83 60 83 9</td>
</tr>
</tbody>
</table>

Table 2
Chest x ray score

<table>
<thead>
<tr>
<th>Case</th>
<th>Operation</th>
<th>Local Chrispin–Norman scores</th>
<th>Number of years followed up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Preop Postop (6 mth)</td>
<td>Long term follow up</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>LLL 3 2 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RUL 5 3 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>RUL 5 4 5</td>
<td></td>
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</tr>
<tr>
<td>5</td>
<td>RUL 6 3 5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>RUL and RML 5 2 4</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data are the Chrispin–Norman scores in the lung quadrant within which the patients had developed local bronchiectasis and for which they underwent lobectomy (maximum score 8).

All children have now been reassessed at least four years postoperatively (table 1). Three remain much improved, with few symptoms and minimal need for intravenous antibiotic therapy. One child remains better than prior to surgery, but has recently required increased intervention to maintain wellbeing (case 5). Two children require antibiotics as frequently as prior to surgery with chronic signs (cases 3 and 6). There were no preoperative risk factors predictive of a less favourable outcome in these patients. Lung function has been maintained in all except one (case 6).

Follow up chest x rays were assessed by a consultant paediatric radiologist, using the Chrispin Norman Scoring system. New radiological changes have tended to occur in the zones previously occupied by the resected lobe (table 2). One of the patients has had a bronchoscopy following right upper lobectomy (case 3). Upwards displacement of the right middle lobe bronchus appeared to be causing airway narrowing. Such distortion of the lung anatomy may predispose to bronchiectasis in lobes that have shifted to occupy the spaces previously occupied by the resected lobe.

Our long term results suggest that surgical resection is a worthwhile option in selected children with severe localised symptomatic bronchiectasis. Detailed preoperative assessment is essential to exclude patients with more extensive lung damage. While there is a good long term improvement of symptoms and preservation of lung function in the majority of patients, there is a tendency for new radiological abnormalities to occur in the zones previously occupied by resected lobes.

J S A Lucas, G J Connott
Department of Paediatrics, Southampton General Hospital, Tremona Road, Southampton SO16 6YD, UK
gary.connott@suhlt.nhs.co.uk
J Fairhurst
Department of Paediatric Radiology, Southampton General Hospital, Tremona Road, Southampton SO16 6YD, UK
Persistent proteinuria appeared four years after transplantation, when a renal biopsy revealed focal necrotising GN.

At the age of 10 years, the identical male twin was found to have microscopic haematuria and proteinuria of >1 g/24 h with normal renal function. Renal biopsy showed focal necrotising GN with 20% cellular and segmental crescents. Perinuclear ANCs were observed at a dilution of 1:160. The stored samples of the first twin were tested and pANCs were detected by indirect immunofluorescence.

This second twin was given intravenous methylprednisolone and cyclophosphamide. The clinical picture was characterised by acute episodes resolving with repeated courses of methylprednisolone pulses.

ANCA positivity in the second twin (also found retrospectively in the first twin’s serum) allowed us to classify the disease as a renal limited vasculitis expressed by necrotising and crescentic GN.

The HLA antigen profiles of the two boys are A3,11; B27,35; DR12; DQ1. Acute nephritis or urinary abnormalities were the initial onset symptoms in our patients. They occur in about 40% of children with ANCA associated GN.1 This emphasises the need for a precise diagnosis and aggressive treatment in such patients. CA should be sought in the presence of acute nephritis or persistent urinary abnormalities of unclear aetiology, and not only in children with frank vasculitis or rapidly progressive GN.

We believe this to be the first report of the recurrence of pauciaemorhus crescentic GN in a transplanted kidney in a child. Anti-rejection treatment with steroids and cyclosporine A seems to be a useful means of controlling disease flare ups.

Furthermore, as far as we are aware, this is the first report of pANCA GN in HLA-identical twins. While the pathogenesis of ANCA-GN is unknown but likely implicates genetic and/or environmental influences.2 The onset of disease at different times in two identical twins seems to suggest a genetically determined susceptibility rather than environmental triggers. Review of the literature revealed few reports of familial vasculitis, with some evidence suggesting a genetic predisposition of the HLA class I antigens present in our twins (A11, B35), and antigen B35 alone have also been found in two families.3

In conclusion, a pANCA test should always be performed in children with acute nephritis of unclear aetiology, a diagnosis of ANCA GN should not preclude renal transplantation. HLA B35 may play a role in the pathogenesis of ANCA GN.

M Giani, L Andronio, A Edefonti, Dept of Paediatrics, G e D. De Marchi, Via Conanno 9, Milano, Italy

References

Clicking ribs—a clinical sign of rib fractures

It is well recognised in non-accidental injury that some children who have rib fractures on x ray have no external evidence of these.

Over the years we have performed ultrasounds on the radiology in non-accidental injury I, and several of my colleagues, have come across a small number of children who have been presented to hospital with factors with a parental complaint of feeling a “clicking” sensation or “grating” feeling in the rib cage or, indeed, even hearing an odd “click”. This has been ignored as a sign of rib fractures. The density loss of the bone could be easily seen on repeat x ray films. These patients have only returned with further injury.

I write to draw the attention of paediatricians to this sign in the hope that it will assist in recognising this for what it is.

H Cartly
Department of Paediatric Radiology, Royal Liverpool Children’s NHS Trust, Alder Hey, Eaton Road, Liverpool L12 2AP, UK

Lipid and glucose metabolism in HIV-1-infected children treated with protease inhibitors


Hepatitis B prevalence among Somali households in Liverpool

A cross sectional descriptive study was undertaken in the Liverpool Somali population in order to determine the prevalence of hepatitis B markers. Sessions were held at two health centres providing care for Somali households. A total of 439 subjects were screened, of whom 194 (43.3%) were children aged less than 15 years. It was found that 5.7 per cent of the study population were carriers of HBsAg, impaired oral glucose tolerance in HIV-1-infected patients. AIDS 1999;13:1623–7.

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children is not undertaken, this may result in unnecessary exposure of these children to hepatitis B infection.

B Brabin, N J Beeching, J E G Bunn, C Cooper, K Gardner, C A Hart
University of Liverpool and Liverpool School of Tropical Medicine, Pembroke Place, Liverpool
L3 5QA, UK; 1.taylor@liverpool.ac.uk

Reference

Treatting childhood hyperhidrosis with botulinum toxin type A

Recently there have been a number of published studies on the use of botulinum toxin type A for hyperhidrosis. These studies focus on its use in adults and we would like to highlight that it can also be useful in treating childhood hyperhidrosis. As in adults, hyperhidrosis can have considerable impact on quality of life in children. This is illustrated by a 13 year old healthy girl referred for treatment of primary hyperhidrosis. Excess palmar sweating caused difficulty with school work (difficulty holding a pen, with the ink smudging the paper because of sweating) and social embarrassment. Botulinum toxin type A (Dysport; 30 mouse units) was administered intradermally using a 27G needle to the finger tips and the area over the hypothalamic eminence of both hands. EMG cream was used for topical anaesthesia. She reported sufficient reduction in palmar sweating within one week to improve her school work. She noticed grip strength reduction that lasted three weeks but did not affect hand function significantly. The beneficial effect of botulinum toxin lasted four months after which she requested further treatment. Repeat injections were given to the fingertips only. No adverse effect on grip strength was reported despite some functional benefit from reduced sweating. To date she has had four courses of treatment over a period of two years with good effect.

Although treatments such as aluminium hydroxide and antiperspirants can be effective, and may be preferred in children, we suggest that botulinum toxin should be considered for children with refractory hyperhidrosis who do not want surgery.

B B Bhakta
Rheumatology and Rehabilitation Research Unit, School of Medicine, University of Leeds, 36 Clarendon Road, Leeds LS2 9NZ, UK; B.Bhakta@leeds.ac.uk

Caring for Muslim Patients


Islam is the religion of one-fifth of humanity and, with an estimated population of 1.6 million Muslims in the UK, a significant minority group. There is, therefore, a need for doctors or their families who have fallen on hard times. You can order a copy from MedLemr, 25 Highfield Road, Northwood, HA6 1EU, UK.

H Marcovitch

The Child with Headache: diagnosis and treatment


Over the past 10–15 years there has been a large volume of research into headache, in general, and childhood headache in particular. Research interest and publications have covered vast areas of previously neglected aspects of childhood headache including epidemiology, pathogenesis, clinical features, classification, impact on child’s life and education, management, psychological adjustment, and medical treatment. Two major developments have helped to drive research into childhood headache and migraine. Firstly, the publication of the classification and diagnostic criteria for headache disorders, cranial neuralgias, and facial pain by the International Headache Society in 1988 triggered better understanding, research interest and debate into headache. Secondly, the introduction of a new generation of specific anti-migraine medications in the early 1990s has started a huge wave of research into migraine. Sumatriptan was the first of many 5HT1 agonists to show effective relief of migraine headache in adults associated with
There is no doubt that this book will prove to be an important and useful resource for paediatricians treating children with headache. Other publications dealing with the practical issues and the organisation of headache services for children are also needed.

I Abu-Arefeh

Core Paediatrics and Child Health


Another textbook of paediatrics finds its way to market, to take its place alongside those already in print. In their introduction, Haddad et al write that they have written this for undergraduates and junior doctors undertaking their first paediatric post. The underlying concepts arise from prior collaborative work undertaken by departments of Child Health in Scottish Universities in response to the GMC guidelines contained in “Tomorrow’s Doctor”. This work, reported in Medical Education,3 provides a structure that gives uniformity of approach for each organ system and indeed the textbook is clearly and consistently laid out.

As with many other authors of textbooks, the authors start with an assumption that the layout of texts will influence learning. It is difficult to find any supportive evidence in educational literature and any research suggests that it is assessment rather than course material that drives acquisition of knowledge and reasoning skills.2 Nevertheless it seems reasonable to assume that those learning paediatrics should be able to choose from a selection of texts written and laid out differently. As such, it could be commended to students if they are considering the purchase of a textbook to support their learning, and I feel sure it will take its place in the “top five” of UK paediatric textbooks.

Although system based, the authors claim they have adopted a “problem oriented approach”. This does not match other books that start with clinical signs and symptoms; such a true problem oriented approach can be seen in Field et al’s book. This difference highlights the difficulty of writing a text for both students and practising doctors. Anecdotally, students, who seem to prefer topic based teaching while SHOs, may find a true problem based approach more suited to their needs. They do, nevertheless, include “key problems”, and have useful sections that review underpinning science, such as “Essential background”. For the enthusiastic student who wishes to pursue any topic further, they have included “Beyond core” material and sections entitled “Highlights and hypotheses”.

At over 300 pages, it probably contains more than is needed at undergraduate level but could be seen as core and a suitable text for reference. SHOs might find its system based layout less helpful in their learning how to practice paediatrics, but it would be a useful starting point for revision for postgraduate exams.

Teachers need to look at evaluation from a different perspective. How should they evaluate material for students undertaking their course? Fundamentally, any text should support and not divert student effort from the learning objectives set. The text could help the teachers by providing them with an agreed core curriculum. As a collaboration between Scottish departments of paediatrics, this should not present a problem north of the border, but others will need to analyse it mindful of their own course objectives. As a tutor at Imperial College School of Medicine this would raise problems. Our main course objectives are that:

1. Students should acquire understanding of families, their structure and how children are supported within this.
2. Students should acquire the skills of history taking and examination of children along with the necessary communication skills.
3. Students should acquire a basic knowledge of common and important childhood diseases.

This textbook clearly supports the last objective but neither 1 nor 2, although it is only fair to say that this criticism could be levelled against other similar textbooks. This could be seen as an argument for radical redesign of all undergraduate texts to match more fundamental course aims rather than a “topic based” core curriculum, but such discussion is outside the remit of a book review such as this.

My one major criticism is that it divides up history taking and examination according to body systems. Development of these clinical skills must be the cornerstone of undergraduate education, and dissection of history taking and examination makes it a difficult text from which to teach these essential practical skills. Having said that, this book offers a fresh, innovative problem based medical school. It provides a structure that gives uniformity of approach for each organ system and indeed the textbook is clearly and consistently laid out.

PostScript

From the point of view of the practising general paediatricians who deal with children with headache in busy medical paediatric clinics, the book provides a good brief overview of the causes of headache, diagnostic assessment, and treatment. The use of simple data collection sheet would be very useful to assist the attending physician in establishing the diagnosis of the type of headache and also in identifying both the trigger and relieving factors. The editors propose, in two appendices, lengthy interviews of the child and the parents that may defy the practicability of the consultation. It would be more appropriate to the clinician if those interviews were short and direct. Also, diaries would be a useful tool to help understand the child’s headache by recording symptoms as they occur.

References

2 Newble DJ, Clarke RM. The approaches to learning of students in a traditional and innovative problem based medical school. Medical Education 1986;20:267–73