LETTERS TO THE EDITOR

Rapid responses
If you have a burning desire to respond to a paper published in *ADC* or *F&C*, why not make use of our “rapid response” option?

Log on to our website (www.archdischild.com), find the paper that interests you, click on “full text” and send your response by email by clicking on “submit a response”.

Providing it isn’t libellous or obscene, it will be posted within seven days. You can retrieve it by clicking on “read rapid responses” on our homepage.

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

Sedation versus general anaesthesia for MRI scanning in children

EDITOR.—We read with interest the article concerning the sedation of children for magnetic resonance imaging (MRI), and would like to support Dr Bray’s view that general anaesthesia is a safer and more reliable method of managing children undergoing this procedure.

In our trust we have a large number of children undergoing MRI scanning, the great majority of whom have general anaesthesia. We have three or four planned half day general anaesthesia sessions per week, all covered by a consultant paediatric anaesthetist. We do still occasionally sedate patients when they require a short scan; because of the urgency it is not possible to schedule them into a fixed general anaesthesia session.

Previously, we relied mainly on sedation techniques, but found a large failure rate due to restless patients moving during the scan. In fact, since general anaesthesia has superseded sedation, the quality of scan has markedly improved and scan times have been reduced.

For patients undergoing cardiac MRI scans, periods of breath holding are required during several scan sequences; this would be impossible to achieve unless the patient was paralysed and ventilated.

CAROLINE DAVIS
Consultant Paediatric Anaesthetist

REZA RAZAVI
Research Fellow in Paediatric Cardiology

The debate between sedation and anaesthesia for children undergoing MRI

EDITORS,—Drs Lawson and Bray have presented arguments for and against deep sedation of children by non-anaesthetists. We would like to contribute to the debate by expanding on issues which have influenced and encouraged the development of a nurse led sedation service for magnetic resonance imaging (MRI) at our hospital.

There continues to be a huge demand for MRI and as a result we have had to meet the challenge of providing a sedation and anaesthesia service with limited resources. With safety in mind, in 1996 we sought funding for sufficient staffing to provide an anaesthesia service as the only service for one MRI scanner, for four days a week. Funding was refused because of high costs, and because the option of improved sedation by non-anaesthetists had not been fully explored. Fortunately, we have been successful in developing our nurse led sedation service and have needed only a modest increase in anaesthesia sessions from two in 1996 to three currently. We now have two MRI scanners and in the total of eight days a week of clinical service, and we are able to look back and reflect that if we had held the philosophy that only anaesthesia was safe then this would have severely limited any expansion and flexibility in the totality of the anaesthetic service we provide to the hospital. We believe we have developed a sedation service by non-anaesthetists that is safe and effective.

Everyone seems to agree that conscious sedation, where the patient can be roused by verbal command, is safe for non-anaesthetists but is impractical for imaging in small children because they must be “asleep” to be still enough. We have always accepted the danger of deeply sedated children becoming effectively anaesthetised during imaging. Indeed, one of us (DH) was a member of the working party that developed the guidelines for sedation in adults quoted by Lawson and Bray. We have therefore applied the following definition of sedation for MRI: a technique in which the use of a drug or drugs produces a state of depression of the nervous system such that the patient is not easily roused but which has a safety margin wide enough to render the loss of airway and breathing reflexes unlikely.

We accept that in an ideal world, anaesthetists are the best people to manage deep sedation. However, this statement is too broad and overlooks the fact that sedation is specific to a particular procedure. Gastroscopy for example, requires sedation to a degree which suppresses the gag reflex and consequently airway reflexes are often reduced. Such a “depth” of sedation is unnecessary for non-painful imaging and therefore mortality data about sedation for all endoscopies are not helpful in answering the question “is deep sedation by non-anaesthetists of children for MRI safe?”

We believe that our nurse led sedation service is safe because we have developed a protocol that makes any airway or breathing problem extremely unlikely and, if it should occur, our nurses have sufficient resuscitation skills to cope until help arrives. Reducing the risk to acceptable levels depends on the strict adherence to exclusion criteria, the characteristics of the drug regimen, and finally, but most crucially, the judgement, skills, and experience of the nurses. Our nurses are carefully assessed after an initial training period, and those who are accepted as sedationists receive regular retraining and reassessment. They work to strict protocols devised by a multidisciplinary team consisting of radiologists, anaesthetists, paediatricians, senior nurses, and radiographers. If such a strictly controlled system is not developed, or suitable people cannot be found to implement it, we have no doubt that an anaesthesia service is safer.

The references quoted by Dr Bray show that accidents can happen if good practice is not followed.

Our latest figures are encouraging. We have sedated almost 3500 children according to our published sedation guidelines and so far no child has required the use of any airway or breathing device. Oxygen saturation has not dropped below 87%. Can anaesthesia, including postoperative recovery by nurses, match these statistics?

It is fair to suggest that a sedation service might be made even safer with anaesthetists present throughout the procedure. Nevertheless in our hospital, we do not believe that such an expense could be justified. Furthermore, if anaesthesia is available they are more cost effective when administering anaesthesia than supervising sedation.

M R J SURY
Consultant Paediatric Anaesthetist,
Great Ormond Street Hospital,
Great Ormond Street, London WC1N 3JH, UK
email: mike.sury@gosh-tr.nthames.nhs.uk

D J HATCH
Preste Professor of Paediatric Anaesthesia,
Institute of Child Health, London, UK

W MILLEN
Senior Nurse, Department of Radiology,
Great Ormond Street Hospital

K CHONG
Consultant Radiologist,
Department of Radiology,
Great Ormond Street Hospital

Investigation of sudden unexpected deaths in infancy

EDITOR.—The CESDI study report on sudden unexpected deaths in infancy and the paper in this journal by Ward, Platt, et al, emphasise the importance of thorough investigation of all sudden infant deaths if the true cause is to be found.

The history of an apparent life threatening event emerges as a significant risk factor for sudden unexpected death and this, together with symptoms of ill health including sweating in the 24 hours before death, suggests that death in these cases may be due to a metabolic cause in a vulnerable infant. Although inherited metabolic diseases (IMD) are rare because of the reduction in preventable deaths following the “back to sleep campaign”, they are now likely to form a higher proportion of all sudden unexpected infant deaths, and accurate diagnosis and...
Guidelines for management of sudden unexpected death in infants under two years old

1. Break the news to parents, explain about the urgency and nature of investigations, and the obligation to inform the coroner, but do not delay taking specimens for metabolic investigations whilst you take a history and examine the baby.

2. Inform the coroner and obtain permission to take specimens.

3. Blood—Perform a heart stab within 30 minutes of death if possible and preferably not over four hours after death. Drop some blood onto blood spot cards directly from syringe (for acyl carnitines). Allow to dry at room temperature. Split the remainder into lithium heparin for metabolic tests spin (store plasma at –20°C); plain (clotted blood) for toxicology spin (store serum at –20°C); blood cultures to incubate at 37°C; and consider blood for chromosomes—especially if dysmorphic.

4. Urine—Suprapubic aspirate (SPA) of bladder. Divide urine into three plain bottles. For microbiology store in fridge at +4°C; toxicology, spin and freeze supernatant at –20°C; biochemistry, for metabolites (amino and organic acids), spin and freeze at –20°C.

5. Nasopharyngeal swab (if less than eight hours after death) for virology into transport medium. Any other body fluids, swabs, etc, store at +4°C for microbiology.

6. Skin biopsy—Send to a metabolic laboratory in culture medium. Store at 4°C.

7. Consider muscle and liver biopsy if there is suspicion of IMD—for example, death of sibling or consanguinity. Contact regional metabolic laboratory for advice.

8. Take a full history, including detailed account of the final 24 hours, position of baby when found, clothing worn, presence of illness in family members, and smoking habits.

9. Complete clinical examination—Look for external marks, bruises or injuries and petechiae, look for skull fracture and in fundus for retinal haemorrhages, record rectal temperature and any other signs of illness.

10. Explain to parents about sudden unexpected death in infancy, encourage them to hold the baby and give bereavement support. Give advice about cessation of lactation if necessary.


12. Check child protection register—particularly important if there are young siblings or a twin.

13. Inform general practitioner, health visitor, community child health and hospital records, and cancel all appointments.

14. Document all specimens taken, label, and ensure an unbroken chain of evidence for forensic specimens. Record the site from which specimens were taken—e.g., cardiac stab, SPA, urine, etc. Remember to date, time, and sign the records as these may become legal documents.

The authors gratefully acknowledge the contributions from many colleagues in Birmingham, Walsall, and Wolverhampton to the development of these guidelines.

index case could well prevent death in a subsequent sibling.

Factors suggesting IMD include consanguineous parents and previous infant death in the family. Although a history of hypotonia or developmental delay and organomegaly may occur, these disorders can cause death without significant prodromal symptoms and can be precipitated in a previously healthy infant by a stress such as infection. Investigations may be limited where no suspected specimens are not obtained as soon as possible, blood ideally within thirty minutes and tissue preferably not more than four hours after death. Many metabolic disorders can be diagnosed on blood or tissue, but some require fibroblasts or other tissue for analysis. It should be possible to perform a skin biopsy for fibroblast culture in most district hospitals.

The CESDI study acknowledged that lack of information was a major impediment to determining the true cause of death and makes recommendations for investigations and procedures following sudden deaths in infancy. It is disappointing that they make no reference to the collection of specimens or procedures to be followed by staff in the accident and emergency department, or wherever the death is confirmed.

It is important that paediatric residents are aware of the urgency and have a protocol for investigation and collection of specimens that has been agreed with the local coroner. In the West Midlands we have written guidelines for managing sudden unexpected death in infancy to ensure that vital evidence of IMD, infection, or non-accidental injury is not lost.

ANIELA MOORE
Consultant Community Paediatrician, Wolverhampton Healthcare Trust, Wolverhampton WV1 1NR, UK

GEORFREY DEBELLE
Consultant Community Paediatrician, Birmingham Children's Hospital, Birmingham B4 6NH, UK

LIL SYMONDS
Consultant in Accident & Emergency, Birmingham Children's Hospital, Birmingham B4 6NH, UK

ANNE GREEN
Consultant Biochemist, Birmingham Children's Hospital, Birmingham B4 6NH, UK


Table 1 Lymphocyte counts and subsets in a child with a large cystic hygroma in the neck

<table>
<thead>
<tr>
<th>Lymphocyte counts (×10³)</th>
<th>Normal ranges in brackets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at test (years)</td>
<td>CD3 (0.69 to 2.25)</td>
</tr>
<tr>
<td>7.3</td>
<td>0.52</td>
</tr>
<tr>
<td>8.2</td>
<td>0.25</td>
</tr>
<tr>
<td>9.9</td>
<td>0.05</td>
</tr>
</tbody>
</table>

www.archdischild.com
picture was typical of bronchiolitis and respiratory syncytial virus (RSV) infection was subsequently confirmed. There was a three day history of coryzal symptoms and “snuffiness”, for which a family doctor was consulted. The family had understood that the good weather in Florida would “do him good”.

Although this infant’s RSV infection might have resulted from apnoea, hypoxaemia, and hospitalisation anyway, it seems likely that lower oxygen pressures in the aeroplane will have aggravated the symptoms. For this family the Christmas period was spent in a paediatric ward in Manchester and not in a holiday resort in Florida. Although we have no information from the airline, we assume that for the emergency landing the plane would have to empty its tanks, filled for a transatlantic distance, in order to achieve a safe landing weight. We presume these tanks will have been emptied over the Irish Sea. In addition to the potential harmful episode to the child and the inconvenience for the family, this infant’s flight probably also caused significant environmental damage.

We accept the contention of Ward Platt et al that any danger from air travel must be very small, but that may not be so for infants who are unwell, and some evidence based guidelines on this subject might be helpful. In the meantime we wonder if we should regard suspicion of bronchiolitis as reason to advise against flying.

STEFAN MEYER
SpH Paediatric, South Manchester University Hospital, Wythenshawe Hospital, Southmoor Road, Wythenshawe, Manchester M23 9LT, UK; email: mdmgssm3@fs1.cmht.north west.nhs.uk

ANDREW J BRADBURY
Consultant Paediatrician, South Manchester University Hospital

These recommendations also differ from Department of Health advice,1 which also differs from that given by the Health Education Authority.2 This debate might be settled if a consensus can be agreed and published in the next edition of Immunisation against infectious disease.3

In the mean time a pragmatic approach is needed. That is to offer MMR under supervision in hospital to children who have had a severe allergic reaction to egg and infants whose general practitioners, practice nurses, or parents are unhappy for them to be given MMR elsewhere.

F ANDREW I RIORDAN
Consultant Paediatrician, Department of Child Health, Birmingham Heartlands Hospital, Birmingham B9 5SS, UK


Dr Lakshman and Dr Finn comment:

We note Riordan’s response to our editorial on the issue of MMR vaccine and allergy and the recommendations put forward by Khakoo and Lack on this topic. While we agree that conflicting advice creates confusion, we cannot agree with his proposed “pragmatic approach”. This amounts to a pointless waste of time and resources—greater than that proposed by anyone else to date—which will simply stoke up unfounded concerns about this vaccine, while diverting people from the important necessity to prepare themselves to tackle cases of severe anaphylaxis which, on the rare occasions that they occur, will continue to do so in community clinic settings.


Dr Marcovitch, Editor in Chief of Archives of Disease in Childhood, comments:

Dr Riordan asks which expert opinion to follow. The answer surely lies in reading the papers carefully, seeking out any key references quoted, and deciding for oneself who has provided the best evidence. This should be the case for all guidelines, but we know that they are often absorbed undigested, which is in one reason why ADC erects fairly firm barriers to their publication. Lakshman and Finn’s paper was commissioned by the editors as a leading article because, as practising paediatricians, we recognised that it caused us problems responding logically to requests to immunise children in hospital.

When we commissioned this paper we did not know that a college committee was embarking on an enquiry; we learned this only after our leading article had been peer reviewed and was set up for publication. Editors of ADC have long been saddened that many of our readers, including members and fellows of the RCPCH, prefer first to submit their papers elsewhere where we realise, of course, that the artificial constraints of the research assessment exercise result in some authors needing to collect Brownie points by publishing in journals with a higher impact factor, even if their research thereby reaches an inappropriate readership. In this sense the BMJ is our competitor, not our partner, which is why editors do not tell each other what they have in the pipeline.

I realise that this cannot have been the case in this instance as the BMJ copied Khakoo and Lack’s paper from the specialist journal in which it originally appeared (which probably has a lower score than ADC and is read by far fewer paediatricians).

Dr Riordan suggests seeking a consensus. Far better would be to undertake a full literature search of RCTs and subject it to a systematic review. The days of guidelines by GOBSAT (grand old boys sitting at table) are over. At this year’s annual scientific meeting of the RCPCH, the journal and the college’s quality of practice committee have forged a working relationship that should leave our readers less confused in future.

Sputum induction for the diagnosis of pulmonary tuberculosis

EDITOR,—We read with interest the study of Zar et al on the usefulness of sputum induction in infants and young children for the diagnosis of pulmonary tuberculosis.1 Bacteriological confirmation of pulmonary tuberculosis in infants and young children remains a problem because it is difficult to obtain sputum. Therefore, in young children, gastric lavage is the recommended method for the collection of respiratory secretions.2 Since the number of tubercle bacilli and the frequency of positive cultures in specimens recovered by gastric lavage are usually small, gastric washings are infused in three consecutive mornings to maximise the yield.3 In this prospective study, children with acute pneumonia with a high risk of pulmonary tuberculosis were included. On 142 children both gastric lavage and sputum induction was performed. The yield of M tuberculosis in sputum and gastric lavage was compared, as was the amount of positive cultures in sputum and gastric lavage. The influence of HIV status on the yield was also determined.

The authors found more positive cultures in the induced sputa compared to the gastric lavages. Therefore they conclude that sputum induction was a more sensitive method than gastric lavage for culture of M tuberculosis. However, in order to compare the sensitivity of two diagnostic tests, one should perform both tests in all patients. In this study, 39 patients underwent only one gastric lavage, 77 patients had lavages on two consecutive mornings, and only 26 patients underwent all three gastric lavages.

We therefore disagree with the authors on one of the conclusions, that induced sputum is better than gastric lavage for the isolation of M tuberculosis in infants and children. In our opinion, in order to answer the question whether sputum induction is as good as or better than gastric lavage, only the results...
from the patients who underwent gastric lavage on three consecutive days should be used.

H E WIERSMA
W M C VAN AALDEREN
M O HOEKSTRA
Department of Paediatric Pulmonology,
Emma Children’s Hospital, Academic Medical Centre,
PO Box 22660, 1100 DD Amsterdam, Netherlands
email: h.e.wiersma@amc.uva.nl


Dr Zar, Tannenbaum, Apollos, Hanslo, and Hussey comment:

Dr Wiersma and colleagues suggest that the yield from a single sputum induction should be compared only with the results of those children who had three consecutive gastric lavages. Only 26 of our patients had three gastric lavages among this subset however, four children were culture positive on sputum while only three were positive on gastric lavage.

Although the yield from gastric lavage is improved with increasing number of specimens, it is frequently not feasible to perform this procedure on three consecutive days, particularly in developing countries with limited resources. Moreover, performing three repeated gastric lavages may be very unpleasant, both to the child and the health worker. In practice, even in tertiary institutions such as those in which our study was performed, obtaining three sequential gastric lavages is rarely feasible.

The yield from sputum induction may also be increased with increasing number of specimens. Therefore we would submit that the yield from consecutive gastric lavages should be compared with that of repeated induced sputa. Data from studies of adult patients using paired specimens of induced sputum and gastric aspirates have reported a higher yield from induced sputa specimens. In our study, the findings that a single induced sputum specimen yielded Mycobacterium tuberculosis more frequently than repeated gastric lavages (in the majority of children) further strengthens our conclusion.


Discusses the father of modern philosophy, in his pivotal work Discourse on method, published in 1637, set himself the task of doubting everything. From that starting point, he then tried to find a solid base of certainty. Over the years, epidemiologists have attempted to follow the Cartesian approach, not least those epidemiologists who are interested in that heterogeneous group of conditions called the “cerebral palsies”. To doubt everything requires imagination and courage, a setting aside of traditional wisdom to establish certainties requires scientific rigour, clear thinking and sheer hard work.

For years, the conventional wisdom has been that most children with cerebral palsy have suffered brain damage at birth, which has led to a movement disorder of varying severity with or without additional intellectual and sensory deficit. This view has been challenged from time to time, but in the last 15 years, disentertaining voices have been loud and persistent. There is now a wide acceptance that not more than 10% of cerebral palsy in term babies is due to adverse intrapartum events. This recognition has opened the way to thinking about the alternative and infinitely more complex pathways that lead to this clinical entity.

The problem now is to define these, to unravel the sequences of events, their temporal order and their interdependence, and their relative importance.

The authors of Cerebral palsies: epidemiology and causal pathways have taken up this challenge. In a systematic, lucid, way, they give the current data on cerebral palsy frequency, the current thinking on risk factors, and present for us a series of hypothetical causal pathways, most of which have an appealing biological plausibility. The authors are to be congratulated for their imagination and clear thinking. It is an elegant written book, a landmark in the ongoing saga of the epidemiology of the cerebral palsies. In turn, they have thrown down a challenge for us—to test the possible pathways using sound methodological approaches, some of which, I suspect, have yet to be developed. The research agenda in this field appears to have been set for a number of years to come.

But perhaps the most exciting prospect is that this painstaking epidemiological work will be much enhanced by the advances in two rapidly developing fields. First, neuroimaging techniques now provide a powerful tool for assessing the timing and the structural and metabolic changes in brain injury. Secondly, there is an increased understanding of the complex biochemical cascades that break up the maternal, fetal, and neonatal response to infection or hypoxia, and the genetic factors which modify this response. This opens up exciting new preventive and treatment possibilities.

The next edition of this book will almost certainly need to draw on a wide multidisciplinary expertise in order to encompass these major advances in our understanding of the pathophysiology of the cerebral palsies.