

therapy particularly predisposed this patient to hyponatraemia.

This raises a number of issues relating to peri-operative and postoperative care. There is often a discrepancy between the prescribing of intravenous fluids and what is eventually administered. Accurate monitoring of fluid balance is notoriously difficult, particularly on busy surgical wards. Patients' oral intake may also be forgotten when estimating intravenous fluid requirements. A standardised postoperative fluid regime needs to be tailored to each individual patient's weight and requirements, and reviewed and modified in response to current investigations. Particular caution is needed in the elderly, those having major surgery, and those on multiple and perhaps unfamiliar medications. Finally, pharmacovigilance remains paramount in anaesthetic practise, with heightened awareness of new therapies for common conditions being essential.

S. Holland

S. Townley

R. Summerfield

Royal Hampshire County Hospital,  
Winchester SO22 5DG, UK

### References

- 1 Thomas A, Verbalis J. Hyponatraemia and the Syndrome of Inappropriate Antidiuretic Secretion Associated with Drug Therapy in Psychiatric Patients. *CNS Drugs* 1995; **4**: 357–69.
- 2 Strachan J, Shepherd J. Hyponatraemia Associated with the Use of Selective Serotonin Re-uptake Inhibitors. *Australian and New Zealand Journal of Psychiatry* 1998; **32**: 295–8.
- 3 Odeh M, Beny A, Oliven A. Severe Symptomatic Hyponatraemia During Citalopram Therapy. *American Journal of Medical Science* 2001; **321**: 159–60.

### Study of postoperative nausea and vomiting: recommending risk models for group comparisons

Having read with great interest the recent paper (Thomas *et al.* *Anaesthesia*

2002; **57**: 1119–28), as it questions the validity of predictive models [1–4] that we endorse, we would like to make the following observations.

The authors compared the incidence of postoperative nausea and vomiting (PONV) predicted by several risk models, based on the demographic characteristics of patients from their previous study [5]. The predicted risks did not correlate very well. However, to conclude that the use of risk scores for group comparisons is limited, ignores the fact that some scores may be considerably better than others [6,7].

Furthermore, if the authors wish to determine whether one of the risk models provides an acceptable prediction, the method of Bland and Altman is certainly not the appropriate choice [8]. This relatively simple but elegant method was originally developed 'for assessing agreement between two methods of clinical measurement' in the absence of a gold standard. However, in risk modelling the gold standard is clearly the actual outcome, i.e. the estimated incidence should be compared with the number of patients that actually suffered PONV or not. Unfortunately, such a comparison was not performed.

Therefore, neither the presented material nor the performed statistical analysis in the discussed paper [4] allows one to conclude that risk scores in general do not provide an appropriate estimate for patient risk (and therefore are not useful for group comparisons). In contrast, the simplified risk scores [3] did provide a realistic estimate of the patients risk for PONV in adults as recently shown in several other centres [6,7,9]. For this and other reasons, we would strongly recommend the use of a simplified risk score for group comparisons in antiemetic trials in adults [10]. The only exception is paediatric anaesthesia due to the lack of a reliable predictive model for children. This is also the reason why a risk score for group comparison was not used in a recent study, since 593 out of 1180 patients were children [11].

If the authors are still not convinced, we would be pleased to support them

by performing a validation study of risk scores in their own centre.

C. C. Apfel

University of Wuerzburg,  
97080 Wuerzburg, Germany  
E-mail: apfel@ponv.org

M. Koivuranta

Jyvaskyla Hospital,  
Jyvaskyla, Finland

B. Sweeney

Poole and Royal,  
Bournemouth Hospital,  
Bournemouth BH7 7DW, UK

### References

- 1 Koivuranta M, Laara E, Snare L, Alahuhta S. A survey of postoperative nausea and vomiting. *Anaesthesia* 1997; **52**: 443–9.
- 2 Apfel CC, Greim CA, Haubitz I *et al.* A risk score to predict the probability of postoperative vomiting in adults. *Acta Anaesthesiologica Scandinavica* 1998; **42**: 495–501.
- 3 Apfel CC, Greim CA, Haubitz I *et al.* The discriminating power of a risk score for postoperative vomiting in adults undergoing various types of surgery. *Acta Anaesthesiologica Scandinavica* 1998; **42**: 502–9.
- 4 Apfel CC, Laara E, Koivuranta M, Greim CA, Roewer N. A simplified risk score for predicting postoperative nausea and vomiting: Conclusions from cross-validations between two centers. *Anesthesiology* 1999; **91**: 693–700.
- 5 Thomas R, Jones N. Prospective randomized, double-blind comparative study of dexamethasone, ondansetron, and ondansetron plus dexamethasone as prophylactic antiemetic therapy in patients undergoing day-case gynaecological surgery. *British Journal of Anaesthesia* 2001; **87**: 588–92.
- 6 Pierre S, Benais H, Pouymayou J. Apfel's simplified score may favourably predict the risk of postoperative nausea and vomiting. *Canadian Journal of Anesthesia* 2002; **49**: 237–42.
- 7 Apfel CC, Kranke P, Eberhart LHJ, Roos IA, Roewer N. A comparison of predicting models for postoperative nausea and vomiting. *British Journal of Anaesthesia* 2002; **88**: 234–40.

- 8 Bland JM, Altman DG. Statistical methods for assessing agreement between two methods of clinical measurement. *Lancet* 1986; **1**: 307–10.
- 9 Eberhart LH, Hogel J, Seeling W *et al.* Evaluation of three risk scores to predict postoperative nausea and vomiting. *Acta Anaesthesiologica Scandinavica* 2000; **44**: 480–8.
- 10 Apfel CC, Roewer N, Korttila K. How to study postoperative nausea and vomiting. *Acta Anaesthesiologica Scandinavica* 2002; **46**: 921–8.
- 11 Apfel CC, Kranke P, Katz MH *et al.* Volatile anaesthetics may be the main cause for early but not delayed postoperative nausea and vomiting: a randomized controlled trial of factorial design. *British Journal of Anaesthesia* 2002; **88**: 659–68.

#### A reply

We thank Dr Apfel and his colleagues for their interest in our paper and would like to respond to the comments they have made.

Our study demonstrated that different scoring systems produce very different estimates of the incidence of postoperative nausea and vomiting (PONV). We found this both perplexing and surprising bearing in mind the similarity of the demographic details that make up the systems that we analysed. While we accept Apfel's statement that some scoring systems may be considerably better than others, without a placebo group, no researcher is going to be able to know which system will be the best or most accurate. We still maintain that the inclusion of a placebo group within an anti-emetic trial involving ambulatory surgery for gynaecological patients is unethical.

For the reason stated above, by necessity, we were working without a known 'gold standard'. Our decision to use the method of Bland and Altman was therefore quite correct. Furthermore, it would have been impossible to perform a comparison in the absence of such a gold standard. This limitation of our study was covered fully in our original discussion.

We quite understand the attractiveness of a simplified risk score to be able to either predict anti-emetic require-

ments or to use within the structure of a randomised control trial. What we believe we have demonstrated is that all the current instruments are too blunt, since moderate accuracy is probably the best one can hope for when trying to construct risk scores by current techniques of modelling.

We thank Professor Apfel for the offer of support in performing a validation of Apfel's risk score in our own centre and would welcome such co-operation. Indeed we are still confused as to how we should be scoring occasional smokers and patients with no previous anaesthetic history (do they really have the same risk of PONV as patients who have had a general anaesthetic and did not suffer from PONV?). Even gender has become contentious and the boundaries blurred. Is the risk of PONV genotypically, phenotypically or hormonally derived?

Moreover, we wish to draw on professor Apfel's teams expertise in testing the utility of his scoring system by challenging the null hypothesis: 'there is no difference in PONV in a population prescribed the currently available anti-emetics based on derived risk (using Apfel's scoring system) and a population where prescribing is left to chance'.

R. Thomas

N. Jones

P. Strike

Salisbury District Hospital,

Salisbury, UK

E-mail: Drrichardthomas@aol.com

#### Fire and frost!

We read with interest the recent letter regarding skin colour changes associated with the use of ethyl chloride spray when testing the height of an epidural block in a parturient with black skin (Kopka. *Anaesthesia* 2003; **58**: 102). The final paragraph asks the question 'Any lesson to be learnt?' In addition to his reply of 'know your basics well and always be prepared for the unexpected', we would like to add the following. Ethyl chloride is a hazardous substance. It is a highly flammable agent and can cause a spectrum of skin damage by rapid evaporation [1]. Therefore, for

health and safety reasons, alternative methods of testing the height of regional anaesthesia should be devised. We have used frozen sachets of sodium chloride 0.9% (25 ml Sterets Normasol, Seton Pebbles Ltd) for the last 5 years and have had no complications.

F. J. Lamb

S. Ali

East Surrey Hospital,

Surrey RH1 5RH, UK

E-mail: fionalamb@ukonline.co.uk

#### Reference

- 1 Ethyl Chloride COSH. information sheet, Roche products Ltd, 2003.

#### Allergic reaction to hyaluronidase after a peribulbar injection

Hyaluronidase is a testicular protein, which hydrolyses hyaluronic acid, a structural component of the intercellular ground substance. It is often mixed in the local anaesthetic solutions used in ophthalmic regional anaesthetic techniques in order to improve the anaesthetic action in terms of speed of onset and spread of block. It is known to be a potential cause of allergic adverse events although there are few reports and little detail in the literature. Consequently, we are reporting a recent case at our institution.

A 41-year-old, 56 kg female presented for removal of a circumferential explant placed a year previously to treat a left sided retinal detachment. Her past medical history included breast carcinoma, treated 2 years ago with mastectomy, irradiation and chemotherapy. Her only regular medication was tamoxifen and she had no known allergies. She reported severe postoperative nausea and vomiting following general anaesthesia, so after discussion it was decided to use a local anaesthetic technique. Sub-Tenon's anaesthesia was impossible due to the explant positioning, so an infero-temporal peribulbar injection using a 25 gauge 25 mm needle was performed. A solution of 2 ml prilocaine 3% with felypressin 0.03  $\mu\text{m.l}^{-1}$  and 3 ml levobupivacaine 0.75%, containing 15  $\mu\text{m.l}^{-1}$