Discussion

The sudden rise in intra-abdominal pressure which occurs in vomiting may lead to the rupture of superficial retinal capillaries. In Valsalva haemorrhagic retinopathy funduscopy shows haemorrhagic detachment of the internal limiting membrane, intraretinal haemorrhage and/or vitreous haemorrhage. Typically there is a circumscribed round or bilobed preretinal haemorrhage at the posterior pole which may develop a fluid level, as in our case. As the haemorrhage clears, visual acuity usually returns to normal.

Our case fits this clinical profile exactly and the absence of any underlying abnormality on fluorescein angiography helps to confirm the clinical diagnosis.

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Reference

1. Williams DF, Mieler WF, Williams GA. Posterior segment manifestations of ocular trauma. *Retina* 1990;10:S35-44.

Sir,

A Simple Method of Warming Local Anaesthetic Solutions

Several authors have reported a decrease in pain associated with the injection of local anaesthetic warmed to body temperature.^{1,2} This practice was first described by Boggia in 1967.³ A double-masked randomised cross-over study of 40 healthy volunteers given a 1 ml subcutaneous injection of 1% lignocaine at 20°C and 30°C showed a statistically significant

reduction in pain score at the higher temperature.⁴ A further study of 136 patients undergoing facial injection with 2% procaine demonstrated a statistically significant linear correlation between mean pain score and temperature of local anaesthetic between 10°C and 42°C.⁵

The mechanism by which warming reduces discomfort is not clear but there are several possible explanations. A colder solution may cause greater nociceptor stimulation. An alternative is that warming the solution may cause a change in the pKa resulting in more rapid onset of neuronal blockade.⁶ This has been demonstrated in regional anaesthesia in a double-masked study of 44 patients receiving caudal blocks.⁷

The technique of warming local anaesthetic is widely practised by dental practitioners but is rarely used in other fields of medicine. An ever-increasing amount of ophthalmic surgery in the United Kingdom is carried out using local anaesthesia. Any modification to avoid patient discomfort would be of obvious benefit. Precise control of local anaesthetic temperature can be achieved cheaply and effectively by using a thermostatically controlled baby milk warmer (Fig. 1). These are widely available in the retail market and currently cost approximately £20.

Other factors have been shown to decrease discomfort, including reducing the speed of injection, diluting the strength of the anaesthetic or altering the pH.⁸ In addition to these factors, anecdotal and trial evidence has shown that temperature has a strong influence on levels of discomfort. We suggest that the baby milk warmer is a simple, cheap and effective method of heating these solutions accurately to the required temperature.

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Fig. 1. A baby milk warmer being used to warm local anaesthetic solution.

References

1. Bainbridge LC. Comparison of room temperature and body temperature local anaesthetic solutions. *Br J Plast Surg* 1991;44:147-8.
2. Cragg AH, Berbaum K, Smith TP. A prospective blinded trial of warm and cold lidocaine for intradermal injection. *AJR* 1988;150:1183-4.
3. Boggia R. Heating local anaesthetic cartridges. *Br Dent J* 1967;122:287.
4. Davidson JAH, Boom SJ. Warming lignocaine to reduce pain associated with injection. *BMJ* 1992;305:617-8.
5. Alonso PE, Perula LA, Rioja LF. Pain-temperature relation in the application of local anaesthesia. *Br J Plast Surg* 1993;46:76-8.
6. Kamaya H, Hayes JJ, Ueda I. Dissociation constants of local anesthetics and their temperature dependence. *Anesth Analg* 1983;62:1025-30.
7. Lim ETM, Chong KY, Singh B, Jong W. Use of warm local anaesthetic solutions for caudal blocks. *Anaesth Intens Care* 1992;20:453-5.
8. Christoph RA, Buchanan L, Begalla K, Schwartz S. Pain reduction in local anaesthetic administration through pH buffering. *Ann Emerg Med* 1988;17:117-20.

Sir,

Testing for Anaesthesia Following Peribulbar Block

We describe a test which determines whether or not an eye is anaesthetic following a peribulbar block. It is equally applicable to a retrobulbar block. Ideally ocular akinesia should be present for surgery, but since this may require a greater volume of local anaesthetic, some degree of eye movement might be traded off against the disadvantage of a tense orbit. An anaesthetic eye, however, is an absolute necessity for local anaesthetic surgery.

Following administration of a peribulbar block a drop of amethocaine is placed on the cornea of the treated eye. If the patient experiences a stinging sensation or there is excessive blinking, the amethocaine test is said to be positive and a further injection of the anaesthetic solution is given. If the test is negative, i.e. the patient denies any sensation of

stinging and the eyelids remain motionless, then no further injection is necessary.

A masked prospective trial of the test was carried out (Table I). Twenty patients were allocated to each group. A peribulbar block was administered using a 6 ml mixture of 2% lignocaine and a 6 ml mixture of 0.5% marcaine. Twelve minutes following the injection, a nurse administered a drop of either amethocaine or saline to the eye in a double-masked randomised fashion (i.e. the surgeon was not aware of which patient received which of the preparations). In stage 1 the patient was asked to indicate whether there was stinging or no stinging. If the patient indicated stinging it was concluded that the anaesthesia was insufficient and a further 3 ml bolus of the anaesthetic mixture was given. This was followed by stage 2 where the surgeon grasped the conjunctiva with Lister forceps and the patient indicated pain or no pain. The results are listed in Table II.

It is concluded that the amethocaine test is an effective test, as no patients in group 2 experienced pain in stage 2, in contrast to group 1, where some did. It helps prevent further anaesthetic injection where not necessary, thus avoiding the further risk of globe perforation or peribulbar haemorrhage.

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Table I. Trial design

Group 1 given g. saline	sufficient anaesthesia	no stinging	no pain
	insufficient anaesthesia	no stinging	pain
Group 2 given g. amethocaine	sufficient anaesthesia	no stinging	no pain

Table II. Results

Group 1 20 patients	sufficient anaesthesia	14 indicated no stinging	14 indicated no pain
	insufficient anaesthesia	6 indicated no stinging	6 indicated pain
Group 2 20 patients	sufficient anaesthesia	16 indicated no stinging	16 indicated no pain
	insufficient anaesthesia	4 indicated stinging therefore given further bolus	4 indicated no pain