bicarbonate measurement (strictly total CO_2 as bicarbonate cannot be readily measured) is rarely clinically indicated and is expensive. In addition it deteriorates in transit and routine measurement of venous samples is likely to be misleading.[1] An accurate assessment of a patient's acid–base status requires measurement of pH and PCO_2 and is, therefore, usually performed on arterial samples when clinically indicated.

Regular routine estimation of plasma electrolytes on patients receiving acetazolamide is not practised by most ophthalmology departments and our study found no need for regular potassium estimation. We believe ophthalmologists will demand more evidence-based medicine in the form of prospective studies of the acid–base status in elderly patients before advocating regular arterial samples to assay bicarbonate in ophthalmology clinics.

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Sir,

I read with interest the recent report by Fraser and Horgan of meningococcal meningitis associated with unilateral subretinal and vitreous haemorrhage.[1] This is not the sole documented case as I have also reported on a patient with meningococcal meningitis in whom intraocular haemorrhage occurred.[2] In this case, bilateral intraretinal haemorrhages developed in addition to unilateral petechial iris haemorrhages and sectorial haemorrhagic iris infarction. In contrast to Fraser and Horgan's case, this latter case was quite clearly related to meningococcal septicaemia and disseminated intravascular coagulation. Cutaneous and systemic haemorrhages in meningococcal septicaemia are considered to occur by different mechanisms. While cutaneous purpura is the result of an endotoxin- and immunologically-related occlusive vasculitis (in which bacteria may thrive), disseminated intravascular coagulation is the main cause of the sterile systemic haemorrhages.[3–5] Thus, although initial management of intraocular haemorrhages in meningitis may be conservative, as suggested by Fraser and Horgan, particularly when associated with *Neisseria meningitidis*, a concerted effort must be made to exclude potentially fatal disseminated intravascular coagulation, even in the absence of cutaneous purpura.

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Sir,

We are grateful for Dr Kennedy's interest in our paper[1] and his comments are highly pertinent.

It is undoubtedly very important that disseminated intravascular coagulation is excluded in meningococcal meningitis, and any patient noted to have an intraocular haemorrhage in the acute stages of the disease should be investigated appropriately. However, retinal or vitreous haemorrhage may be difficult to diagnose in the acute situation. The patient often has a decreased level of consciousness and therefore will not complain of a decrease in vision. Examination of the fundi can also be difficult because of photophobia and the problems of dilating a patient who is undergoing neurological observations.

The patient who we reported did not complain of any visual problems until 6 days after her admission, and this seems to be typical of ocular complications in meningitis. Dr Kennedy's case exemplifies the importance of ocular examination in the patient with meningococcal meningitis at the time of presentation – and this examination should continue throughout the course of the disease. Further to this, because ocular complications of meningitis may be as high as 70%,[2] there may well be a case for routine referral to an ophthalmologist for a fuller examination once the acute stage of the disease has passed.

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References

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Sir,

I was interested to read the study by I. G. M. Duguid *et al.*[1] on topical anaesthesia for phacoemulsification surgery in a recent issue of *Eye*. I have completed a similar survey, with results which support this study.

Thirty patients underwent phacoemulsification using topical anaesthesia only. The surgery involved a 3 mm clear corneal incision with no bridle sutures and the insertion of a foldable lens. The anaesthetic was given by soaking a collagen contact lens in 4% lignocaine and applying this to the eye 1 hour before surgery. This was topped up with additional drops whilst the surgeon was scrubbing up.

Pain scores in these patients were compared with those in 30 age- and sex-matched patients undergoing phacoemulsification using a peribulbar block. The surgery involved a superior rectus bridle suture, a 6 mm clear corneal incision and the insertion of a non-foldable lens and sutures; otherwise the operative procedures were the same. The peribulbar anaesthetic consisted of an 80 : 20 mixture of 0.5% bupivacaine, 4% lignocaine and hyaluronidase given by inferior–temporal and superior–nasal injection.

The patients' perception of pain was assessed three times, at the time the pain was being experienced, on a 0–10 scale. This was done at administration of the anaesthetic, peri-operatively (first incision) and 3–6 hours post-operatively. The groups were compared using the Wilcoxon matched pairs sign-rank test. The results are shown in Table I.

None of the patients said the pain they experienced at any time during either of the procedures was unacceptable. In addition there was no difference between the two groups in analgesia requested post-operatively, and the lack of ocular akinesia was not a problem for the surgeon during any of the operations in this study. The lignocaine-soaked contact lens was inserted 23–83 minutes before the operation commenced. There was no significant correlation between the time the contact lens was in place and perioperative pain experienced by the patient.

Table I. A comparison of the mean pain scores with peribulbar and topical anaesthesia

Mean pain scores (0–10)	Topical anaesthesia	Peribulbar anaesthesia	Wilcoxon two-tailed *p* value
Anaesthetic administration	0.59	1.79	0.003
Peri-operatively	0.90	0.27	0.03
3–6 hours post-operatively	1.97	1.02	0.27

These results support the use of topical anaesthesia for phacoemulsification. The topical anaesthetic appears to be more comfortable to administer (difference in means 1.2) and patients experience only marginally more discomfort during the operation (difference in means 0.63).

As Duguid *et al.*[1] suggest, topical anaesthesia has a lower rate of complications, allows a quick turn around of patients and is cheaper. They also suggest that the unanaesthetised iris may be sensitive if touched. However, Fischman[2] reports that 'Sphincterotomies may be routinely performed in eyes with small bound down pupils. The patient generally experiences no discomfort from this. Likewise, during trabeculectomies, the peripheral iridectomy . . . seems to cause no patient discomfort.'

The arguments in favour of topical anaesthesia during phacoemulsification are increasing.

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I read the letter on valsalva haemorrhagic retinopathy in a pregnant woman by D. Callender, Z. A.Y. Beirouty and S. N. Saba (Eye 1995;9:808-9). They simply observed the preretinal haemorrhage of the macular area nearly every 2 weeks until resolved. The more appropriate treatment for such a case will be drainage of the subhyaloid haemorrhage by means of membranotomy using Nd:YAG laser. This will drain haemorrhage and quickly lead to full visual rehabilitation. I have been employing this mode of treatment for the past several years with success. This will also reduce complications such as epiretinal membrane formation. I am pleased to note that they did not encounter retinal complication on this occasion.

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