CORRESPONDENCE

The oculocardiac reflex in cataract surgery in the elderly

EDITOR,—The letter by Gao Lei *et al*¹ gives an erroneous impression that retrobulbar injection per se produces oculocardiac reflex (OCR). On the contrary, retrobulbar anaesthetic infiltration is a method of prophylaxis to prevent OCR in patients under general anaesthesia.² In patients operated under retrobulbar anaesthesia, "heart rhythm and rate become stable once the block has taken effect; occasional ectopics or heart rate changes before this seemingly being due to the stimulus of needle prick or the adrenaline in the solution".³ The author's experience is the same as described in the last paragraph. Their definition of OCR as at least a 10% decrease in heart rate below relative baseline is arbitrary. In a previous well designed study, Mirakhur *et al* have taken bradycardia of 70 or less heart beats per minute at any time during surgery and persisting for more than 15 seconds as study criteria and OCR as slowing of heart rate by more than 20% or arrhythmia during traction irrespective of heart rate.⁴ They felt that smaller decreases in heart rate do not usually require treatment. The findings by Gao *et al* do not mention the duration of arrhythmias or duration of drop in heart rate. It has been observed that development of inherent endogenous β blockade occurs with increasing age. Therefore isolated heart rate recording without simultaneous recording of blood pressure is erroneous.⁵ The various factors that can increase the risk of OCR reviewed by Scott Lang and van der Val are hypercarbia, hypoxaemia, light anaesthesia, young age due to higher resting vagal tone, pharmacological agents such as potent narcotics (sufentanil, alfentanil), β blockers and calcium channel blockers, and the nature of the provoking stimulus—namely, strength of stimulus, and duration.⁶ As the patients in the study by Gao *et al* were all over the age of 60 years and six of 10 patients who had OCR had abnormal preoperative electrocardiograms, the role of pharmacological agents described above must be taken into consideration before implicating steps of cataract surgery in triggering OCR. The adoption of preventive strategies described by Scott Lang and van der Val for avoidance of predisposing factors to the development of OCR (cessation or modulation of surgical stimulus by administering intravenous atropine or glycopyrrolate and by retrobulbar anaesthesia) have reduced the incidence of OCR during ocular surgery.

Sorensen and Gilmore have reported successful resuscitation by external cardiac massage following OCR. This was quoted by Arndt in his reply to Scott Lang and van der Val.⁷ In his reference Smith mentioned that as death due to OCR which Gao *et al* have also incorrectly cited.⁸ The incorrect reference by Gao *et al* raises the issue of obligation to reference carefully important points in their manuscript.⁹

The potential for fatality or cardiac arrest could be chiefly the result of ignoring preventive measures. Cardiac arrest could also be due to cardiac toxicity by inadvertent intravascular injection of local anaesthetic. Considering the above danger associated with retrobulbar block, attention now is focused on a safer peribulbar block. Although peribulbar block is a safe and a superior procedure, its practice is mostly lim-

ited to experienced and skilled ophthalmologists in institutes of higher learning. However, retrobulbar block remains a highly popular procedure with many practising ophthalmologists even today. One should be unambiguous when considering the role of retrobulbar anaesthesia in producing OCR, as it is the mainstay of cataract surgery in many countries. Any incorrect information sends the wrong signals to practising ophthalmologists using retrobulbar anaesthesia in cataract surgery in preference to expensive, potentially dangerous, and technically difficult general anaesthesia.

In a control double blind study, Kundra demonstrated that combining peribulbar block with general anaesthesia in children undergoing intraocular surgery completely abolished OCR, reduced the requirement of anaesthetics, and produced early recovery from anaesthesia with satisfactory postoperative analgesia (Kundra Pankaj, Department of Anaesthesia, JIPMER, Pondicherry, personal communication).

G SESHUBABU

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- 1 Gao Lei, Wang Qing, Xu Haifeng, *et al*. The oculocardiac reflex in cataract surgery in the elderly. *Br J Ophthalmol* 1997;81:614.
- 2 Kirsch RE, Sarret P, Kugel V, Axelrod S. Electrocardiographic changes during ocular surgery and their prevention by retrobulbar injection. *Arch Ophthalmol* 1957;58:348-56.
- 3 Alexander JP. Reflex disturbances of cardiac rhythm during ophthalmic surgery. *Br J Ophthalmol* 1973;59:518-24.
- 4 Mirakhur RK, Jones CJ, Dundee JW, *et al*. IM or IV atropine or glycopyrrolate on the prevention of oculocardiac reflex in children undergoing squint surgery. *Br J Anaesth* 1982;54:1059-63.
- 5 Pan MY-M, Hoggman BB, Pershe RA, *et al*. Decline in beta adrenergic receptor mediated vascular relaxation with ageing in man. *J Pharmacol Exp Ther* 1986;239:802.
- 6 Scott Lang DT, van der Val M. Trigemino-cardiac reflexes—maxillary and mandibular variants of oculocardiac reflexes. *Can J Anaesth* 1991;38:757-60.
- 7 Arndt AG. Death from oculocardiac reflex (Reply). *Can J Anaesth* 1994;41:161.
- 8 Smith RB. Death and the oculocardiac reflex. *Can J Anaesth* 1994;41:760.
- 9 Beibuyck JF. Concerning the ethics and accuracy of scientific citations (Editorial). *Anesthesiology* 1992;77:1-2.

Reply

EDITOR,—Dr Seshubabu raised several points with regard to oculocardiac reflex (OCR) and the study we conducted.

Retrobulbar injection is a manoeuvre that begins with needle prick in the region between the lateral rectus muscle and optic nerve. Before the block has taken full effect, the reflex may be induced by stimulus of needle disturbance, retrobulbar bleeding,¹ or even the anaesthetic solution (2.5 ml) which probably has effects on intraorbital pressure within a short time. Ocular compression was found to be the most common triggering event in precipitating the OCR in our study. Five of 30 patients (16.7%), compared with 14 of 20 patients (70.0%) reported by Sun Yuxun² (defined as at least a decrease of 10 beats per minute more stringent than ours) were noted to have the OCR during digital pressure of the eyeball. This was highly significant by $\chi^2=14.48$, $p<0.001$. The two groups were similar in demographics. In Sun's study, however, retrobulbar anaesthesia had not been applied before any manipulation was performed. Therefore, we think that local retrobulbar anaesthesia decreases, not completely abolishes, the OCR.

To our knowledge, there are three main criteria for the OCR, irrespective of blood pressure, cardiac output, and the duration of

arrhythmias and bradycardia. Vrabec *et al*³ and Eustis *et al*⁴ defined it as a 10% decrease, while Karhunen *et al*⁵ defined it as a 20% decrease in baseline heart. Other reports^{1,6} defined it as at least a decrease of 10 beats per minute. Because of the instability and continuity of electrocardiac activity, we divided the natural standard surgery into six procedures according to their suspected disturbance to the eye and adopted the relative baseline heart rate. We believed that notable changes in electrocardiac activity within a shorter period of time would be more significant in the clinical sense. In our original paper published in Chinese, we suspected that the criteria for the OCR may be too conservative and incomplete, and they may need revision to assure greater clinical significance. It is our desire that more scientific new criteria for OCR would be established by ophthalmologists cooperating with cardiovascular surgeons.

At the beginning of the next century, more than 10% of the total population in China will be over the age of 60. Because of a positive association between cataract and age, patients over 60 years old scheduled for cataract extraction at the practice of one of us (GL) were eligible for our study. They can be recognised as random samples. It is true that various factors may influence the OCR. However, the study that we have conducted was to determine the true incidence of OCR among certain people, regardless of their sex, general health condition, medication, etc.

Owing to a misunderstanding, we incorrectly cited one of our references.

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- 1 Yu Xiumin, Wang Lihua. The oculocardiac reflex during ocular operation under various anaesthesia. *Chinese J Ophthalmol* 1991;27:34-6.
- 2 Sun Yuxun. Ocular compressed and oculocardiac reflex. *Chinese J Practical Ophthalmol* 1989;7:171.
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- 4 Eustis HS, Eiswirth CC, Smith DR. Vagal responses to adjustable suture in strabismus correction. *Am J Ophthalmol* 1992;114:307-10.
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- 6 Xu Zhaoxu, Luo Wenbin, Zhang Guohui, *et al*. Oculocardiac reflex and nervus vagus tension. *Chinese J Practical Ophthalmol* 1988;6:733-5.

Sub-Tenon's anaesthesia

EDITOR,—We congratulate Roman *et al*¹ on their excellent paper on sub-Tenon's anaesthesia. We concur that it is efficient, safe, and effective and we agree that it is a useful form of supplementary anaesthesia in patients who experience discomfort during topical anaesthesia. However, the issue of sub-Tenon's anaesthesia in warfarinised patients has not been addressed.

Between July 1995 and December 1996, we performed 34 cataract extractions in warfarinised patients, using sub-Tenon's anaesthesia. Thirteen of the 34 procedures were performed in patients with prosthetic heart valves who required the maintenance of a high international normalised ratio (INR). Mean INR at the time of surgery was 2.5. No haemorrhagic complications were encountered

intraoperatively. The anaesthesia was effective in all cases. A degree of subconjunctival haemorrhage was encountered in all patients despite the application of cautery before conjunctival incision. Twelve eyes suffered subconjunctival haemorrhages involving between two and three quadrants of the conjunctiva. Two eyes had haemorrhage involving more than three quadrants. There were no other anaesthetic related complications.

Warfarinised patients represent a small but significant proportion of those requiring cataract surgery. Stopping warfarin in anticoagulated patients can be hazardous.² Underlying medical conditions may also make general anaesthesia hazardous. Retrobulbar and peribulbar anaesthesia, although not contraindicated, have obvious dangers. Sub-Tenon's anaesthesia avoids the potential complications of the aforementioned methods. Subconjunctival haemorrhage was the only adverse effect that we encountered. Haemorrhage from a vortex vein is a theoretical risk of the technique, but has not been reported to date.

While topical anaesthesia offers many of the same safety advantages, sub-Tenon's anaesthesia has significant advantages over topical anaesthesia in sensitive patients and in eyes which are predisposed to potentially time consuming complications.

We conclude that sub-Tenon's anaesthesia deserves very serious consideration in all warfarinised patients requiring cataract surgery.

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- 1 Roman SJ, Chong Sit DA, Boureau CM, *et al.* Sub-Tenon's anaesthesia: an efficient and safe technique. *Br J Ophthalmol* 1997;81:673-6.
- 2 Stone LS, Kline OR Jr, Sklar C. Intraocular lenses and anticoagulant and antiplatelet therapy. *Am Intra-ocular Implant Soc J* 1985;11: 165-8.

Reply

EDITOR,—I thank Drs Reilly and Logan for their comments on our article. Since the paper has been published we have performed a few cataract extractions in anticoagulated patients. We did not encounter any problems related to the anaesthesia. However, because of a possible massive subconjunctival haemorrhage and theoretical risk of a vortex vein trauma, we prefer to start the cataract surgery under topical anaesthesia with lignocaine irrigation to the anterior chamber (Gill's technique). As mentioned by Reilly and Logan in some cases (poor pupillary dilatation) the patients may still experience discomfort, we will then supplement the anaesthesia with an intraoperative sub-Tenon's injection. We would not consider peribulbar or retrobulbar anaesthesia.

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Elimination of trachoma: follow up

EDITOR,—In my previous letter on this subject,¹ I stressed the importance of starting a trachoma control programme, in addition to the one already planned in Morocco, in one of the countries in which the disease poses a greater problem. However, I did not intend to support widespread implementation of trachoma elimination programmes by non-governmental or other organisations. While

the original strategy was too conservative, the latter is unwise for the following reasons.

Azithromycin is effective against small, short lived, fast reproducing parasites that in time will develop resistance to the drug. Widespread, inadequately controlled use of azithromycin in mass treatments may trigger early resistance and the manufacturers may forbid further use of the drug for disease control programmes. Furthermore, such an occurrence could compromise future collaboration between pharmaceutical companies and public health officials.

The objective "elimination of trachoma" is misleading. While countries like Morocco can attempt to achieve such an objective, elimination of trachoma is unfeasible in countries such as Ethiopia or Mali with drugs available today. The objective in such countries should be limited to "elimination of trachoma blindness". If the goal is not clearly articulated, programmes may fail to develop essential techniques such as mapping of the distribution and severity of the disease, or methods to monitor and evaluate initial results. Convenience will guide mass treatment. As trachoma is a rural disease, most of the people at risk of blindness may be overlooked because difficult or expensive to reach.

Countries affected by trachoma should be divided into two groups:

- (1) those that could attempt to eliminate the disease; and
- (2) those that should attempt to eliminate trachoma blindness.

A limited number of well planned and carefully monitored control programmes, using azithromycin, should be conducted in both types of countries to gain experience and develop needed techniques. If these efforts are successful, more ambitious programmes may be designed.

G DE SOLE

1 Pascoe Avenue, BP 6988, Harare, Zimbabwe

- 1 De Sole G. Elimination of trachoma. *Br J Ophthalmol* 1997;81:518.

OBITUARY

Clifford "Grant" Tulloh, PHD, MD, MS, DO,
FRCS ENG, 1926-97

Clifford "Grant" Tulloh was consultant ophthalmologist at Bristol Eye Hospital and Frenchay Hospital from 1963 until Parkinson's disease necessitated his early retirement in 1981. He attended Newcastle Grammar School, followed by the University of Durham with graduation in 1949. As registrar and senior registrar at Moorfields Eye Hospital (High Holborn Branch) he learned clinical and surgical ophthalmology, to which were added research achievements in glaucoma and especially retina detachments as research fellow at the Institute of Ophthalmology, University of London (1953-62). These were converted into a remarkable score of higher degrees. I was particularly impressed by his cogently argued evidence that raised ocular tension, complicating iridocyclitis betrayed a predisposition to so called primary glaucoma.

A consultant post at Eastbourne Eye Hospital from 1962 was cut short by his appointment at Bristol in 1963.

The tragedy of an early onset of unrelenting progressive parkinsonism with marked speech defect disrupted two lives, his own and that of his wife Phoebe who nursed him devotedly at home without respite throughout: her loyalty was unquestioning. Their strength of character triumphed over many years of adversity: he showed no sign of complaint or resentment, although intellectually unimpaired, and encouraged Phoebe's talent for painting.

His ability to see the logical wood for the distracting trees produced swift decisive conclusions presented in direct laconic style. His surgery showed a corresponding economy of fluent movement, consistent with his skill in piano playing and his undergraduate swimming and water polo of which he was captain at university.

He leaves a widow; one son, a consultant paediatric cardiologist; and one daughter, a teacher of science; and five grandchildren.

C I PHILLIPS

NOTICES

Glaucoma Society (UK & Eire)

DAVID COLE TRAVEL FELLOWSHIP

The David Cole Travel Fellowship, instituted by Merck Sharp and Dohme in memory of Professor David Cole, will assist a visit to a hospital or research centre during the academic year starting 1 October 1998. The award will be equivalent to £2000. The purpose of the award is to enable the successful applicant to gain experience and knowledge in pursuit of a specific project related to glaucoma.

THE GLAUCOMA SOCIETY (UK & EIRE)

RESEARCH GRANT

The Glaucoma Society (UK & Eire) research grant, sponsored by the International Glaucoma Association will be available for a research project clinically orientated to glaucoma for 1998. The award will be equivalent to £2500.

The grant may be used towards salary or project expenses or for buying equipment.

THE GLAUCOMA SOCIETY (UK & EIRE)

RESEARCH AWARD

The Glaucoma Society (UK & Eire) research award, sponsored by Alcon Laboratories will be given in support of a research project related to glaucoma. The award will be equivalent to £2000.

These awards are available to both medical graduates and non-medical scientists resident in the United Kingdom or Ireland. They may be held concurrently with other awards.

For further details and application forms please contact: Dr S Nagasubramanian, Secretary, Glaucoma Society (UK & Eire), Glaucoma Unit, Moorfields Eye Hospital, City Road, London EC1V 2PD.

The closing date for applications is 10 June 1998.

Eye injuries worldwide

The latest issue of the *Journal of Community Eye Health* (no 24) concerns the magnitude of injuries worldwide. It covers the causes and prevention, health promotion and eye injuries, ocular injury pattern in Pakistan, primary care of eye injuries, and epidemiology in practice. For further information please contact Journal of Community Eye Health, International Centre for Eye Health, Institute of Ophthalmology, 11-43 Bath Street, London EC1V 9EL. (Tel: (+44) 171 608 6910; fax: (+44) 171 250 3207; email: eyeresource@ucl.ac.uk) Annual subscription £25. Free to workers in developing countries.

Residents' Foreign Exchange Programme

Any resident interested in spending a period of up to one month in departments of ophthalmology in the Netherlands, Finland, Ireland, Germany, Denmark, France, Austria, or Portugal should apply to: Mr Robert Acheson, Secretary of the Foreign Exchange Committee, European Board of Ophthalmology, Institute of Ophthalmology, University College Dublin, 60 Eccles Street, Dublin 7, Ireland.

Wilmer Ophthalmological Institute

The Johns Hopkins Medical Institution/Residents Association of the Wilmer Ophthalmological Institute is holding its 57th clinical meeting at the Baltimore-Turner Auditorium, JHH on 1-2 May 1998. Further details: Ms Sharon Welling, Conference Coordinator, Wilmer B20 - Johns Hopkins Hospital, 600 North Wolfe Street, Baltimore, MD 21287-5001, USA. (Tel: 410-955-5700; fax: 410-614-9632).

4th International Vitreoretinal Meeting

The 4th International Vitreoretinal Meeting will be held in Parma, Italy on 29-30 May 1998 at the University Eye Clinic. Further details: C Cantù and M A De Giovanni, Institute of Ophthalmology, University of Parma, Via Gramsci 14 - 43100 Parma, Italy. (Fax: ++39.521.292358; email: gnuzzi@rsadvnet.it)

11th Annual Meeting of German Ophthalmic Surgeons

The 11th Annual Meeting of German Ophthalmic Surgeons will be held on 28-31 May 1998 in the Meistersingerhalle, Nürnberg, Germany. Further details: Organisation Nürnberg GmbH, Wielandstrasse 6, D-90419

Nürnberg, Germany. (Tel: +49-911-393160; fax: +49-911-331204).

9th British Association of Day Surgery Annual Scientific Meeting and Exhibition

The 9th British Association of Day Surgery Annual Scientific Meeting and Exhibition will take place at the Harrogate International Centre on 4-6 June 1998. Further details: Kite Communications, The Silk Mill House, 196 Huddersfield Road, Meltham, W Yorks HD7 3AP. (Tel: 01484 854575; fax: 01484 854576; email info@kitecomms.co.uk)

XVIIIth International Congress of Ophthalmology

The XXVIIIth International Congress of Ophthalmology will be held in Amsterdam on 21-26 June 1998. Further details: Eurocongres Conference Management, Jan van Goyenkade 11, 1075 HP Amsterdam, Netherlands. (Tel: +31-20-6793411; fax: +31-20-6737306; internet <http://www.solution.nl/ico-98/>)

First Combined International Symposium on Ocular Immunology and Inflammation

The First Combined International Symposium on Ocular Immunology and Inflammation will be held in Amsterdam on 27 June-1 July 1998. The meeting is sponsored by the International Ocular Immunology and Inflammation Society, the International Uveitis Study Group, and the Immunology and Immunopathology of the Eye Organisation. Further details: Professor Aize Kijlstra, The Netherlands Ophthalmic Research Institute, PO Box 12141, 1100 AC Amsterdam, Netherlands (email: a.kijlstra@amc.uva.nl)

2nd International Conference on Ocular Infections

The 2nd International Conference on Ocular Infections will be held on 22-26 August 1998 in Munich, Germany. Further details: Professor J Frucht-Pery, 2nd International Conference on Ocular Infections, PO Box 50006, Tel Aviv, 61500, Israel. (Tel: 972 3 5140000; fax: 972 3 5175674 or 5140077; email: ocular@kenes.com)

XVI Tuebingen Detachment Course

The XVI Tuebingen Detachment Course in retinal and vitreous surgery will be held 4-5 September 1998 in Odessa, Ukraine. Further

details: Professor I M Logai, Director, The Filatov Institute, 49/51 Boulevard Francais, Odessa, 270061, Ukraine. (Tel: +38-0482-22 20 35; fax: +38-0482-68 48 51).

ICOP 98

The next International Conference in Ophthalmic Photography (ICOP) will be held on 19-21 September 1998. Further details: Mrs Gillian Bennerson, Senior Ophthalmic Photographer, Bristol Eye Hospital, Lower Maudlin Street, Bristol BS1 2LX. (Tel: 0117-928-4677).

VIth International Symposium on Graves' Ophthalmology

The VIth International Symposium on Graves' Ophthalmology will be held on 27-28 November 1998 in Amsterdam. Further details: Amsterdam Thyroid Club, Department of Endocrinology, F5-171, Academisch Medisch Centrum, Meibergdreef 9, 1105 AZ Amsterdam, Netherlands.

XII Congress European Society of Ophthalmology

The XII Congress European Society of Ophthalmology will be held in Stockholm, Sweden on 27 June-1 July 1999. Further details: Congress (Sweden) AB, PO Box 5819, S-114 86 Stockholm, Sweden. Tel: +46 8 459 66 00; fax: +46 8 661 91 25; email: soe@congrex.se; <http://www.congrex.com/soe/>

CORRECTIONS

Errors occurred in the article by Cleary *et al* that appeared in the March issue of the *BJO* (1998;82:225-31).

In the results section, para 3 all the degree signs (°) relating to the deviation measurement should be replaced by "prism dioptres". Similarly, in para 4 the degree signs (°) referring to the 4 dioptre test should be replaced by "prism dioptres".

An error occurred in the article by McCarty *et al* that appeared in the April issue of the *BJO* (1998;82:410-14).

In Table 3 the percentage of people without diabetes that have seen an ophthalmologist should be 25.4%, not 55.6%. The numbers (746/2933) are correct.

We apologise for these errors.