



Figure 2 Case 3. Photographs of the right eye of the patient with exacerbation of atopic keratoconjunctivitis obtained (a and b) before and (c and d) four days following treatment; (a and c) images taken using exciter and barrier filters of the fundus camera; (b and d) colour fundus camera images.

ciclosporin ointment (Case 1) (Figure 1c and d) documented mostly discrete scattered dots without well-defined stellates and a few large foci of staining in the paracentral cornea (Figure 1c).

Photograph of the right eye taken from the patient with exacerbation of AKC at the first visit showed high-contrast corneal punctate staining and staining of the paracentral larger epithelial defect (Figure 2a), which were difficult to visualise with white (Figure 2b) and blue light. The images obtained on the fourth day of treatment documented significant reduction in punctate fluorescein corneal staining (Figure 2c).

To our knowledge, this is the first report demonstrating the ability of the method to visualise the stellate pattern of staining in Thygeson's disease in high contrast and to accurately monitor dynamic changes in fluorescein staining.

Further work is required to standardise this method for use in diagnosis and follow-up assessments.

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References

- Novitskaya ES, Dean S, Moore J, Sharma A. A novel method to study fluorescein staining of the ocular surface using the fluorescein angiogram setting of the fundus camera. *Cont Lens Anterior Eye* 2007; **30**: 258–259.
- Dean SJ, Novitskaya ES, Moore TC, Moore JE, Sharma A. Documentation of corneal epithelial

defects with fluorescein-enhanced digital fundus camera photography. *Clin Experiment Ophthalmol* 2008; **36**: 113–118.

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Sir, Comment on ocular manifestations of crush head injury in children

The article by Gnanaraj *et al*¹ contains inconsistencies, inaccurate statements, and misleading conclusions mandating clarification.

- The first case reports associating retinoschisis and perimacular retinal folds with child abuse were published in 1986 and 1988, respectively.^{2,3} However, Group 2 by Gnanaraj *et al*¹ was extracted from a biased sampling of autopsies occurring between 1982 and 1989 tabulated by Gilliland *et al*.⁴ How can ocular findings be assessed when they had not yet been described in the literature?

- According to Gnanaraj *et al*,¹ none of the nine fatalities with putative crush head injuries in Group 2 had retinoschisis or folds, but peer-reviewed publication of these fundal findings has not occurred in any of the purported child abuse (shaking) fatalities from that 20-year-old data set.⁴
- The authors misstate that crush injuries to the head are the 10th most common cause of injury in children under the age of 9 years. The cited reference lists crush injury as the 10th most common cause of injury in children under the age of 9 years (ICD-9 codes 925–929).⁵ This specifically excludes intracranial injury (ICD-9 codes 850.0–854.1).⁶
- Gnanaraj *et al*¹ claim that the perimacular retinal folds observed in the child from the evidence-based case report by Lantz *et al*⁷ were a bit atypical, more angulated at the apex; however, the cited reference does not discuss this subjective nuance nor was apical angulation of the retinal folds described in the case report or evident from the accompanying images.⁸
- Gnanaraj *et al*¹ state that retinal haemorrhages are well recognized although uncommon in accidental major head trauma citing a 1992 study.⁹ This article has been previously identified as exhibiting selection bias based on the relative minor head trauma sustained in the accident group.⁷ Similar systematic error is obvious in the selection of patients (Group 1) by Gnanaraj *et al*¹ when compared to previously published studies characterizing the morbidity and mortality of head injuries associated with falling televisions.^{10–12} Remarkably, four of the nine children (44.4%) with accidental head injuries in Group 2 by Gnanaraj *et al*¹ had retinal haemorrhages.

All too often, the human tendency is to embrace repetitious assertions that reinforce authoritative opinions, but trivialize or reject new findings that do not support entrenched beliefs.¹³ The perpetuated claim that retinoschisis and perimacular retinal folds in children are created by vitreoretinal traction during violent shaking resides in faith not in science.

References

- 1 Gnanaraj L, Gilliland MG, Yahya RR, Rutka JT, Drake J, Dirks P *et al*. Ocular manifestations of crush head injury in children. *Eye* 2007; **21**: 5–10.
- 2 Gaynon MW, Koh K, Marmor MF, Frankel LR. Retinal folds in the shaken baby syndrome. *Am J Ophthalmol* 1988; **106**: 423–425.
- 3 Greenwald MJ, Weiss A, Oesterle CS, Friendly DS. Traumatic retinoschisis in battered babies. *Ophthalmology* 1986; **93**: 618–625.
- 4 Gilliland MG, Luckenbach MW, Chenier TC. Systemic and ocular findings in 169 prospectively studied child deaths: retinal hemorrhages usually mean child abuse. *Forensic Sci Int* 1994; **68**: 117–132.
- 5 Spady DW, Saunders DL, Schopflocher DP, Svenson LW. Patterns of injury in children: a population-based approach. *Pediatrics* 2004; **113**: 522–529.
- 6 Hart AC, Hopkins CA, Ford B (eds). *International Classification of Diseases, 9th Revision, Clinical Modification (ICD-9-CM Professional for Physicians Volumes 1 and 2)*. Salt Lake City, UT: Ingenix Inc.; 2006.

- 7 Lantz PE, Sinal SH, Stanton CA, Weaver Jr RG. Perimacular retinal folds from childhood head trauma. *BMJ* 2004; **328**: 754–756.
- 8 Massicotte SJ, Folberg R, Torczynski E, Gilliland MG, Luckenbach MW. Vitreoretinal traction and perimacular retinal folds in the eyes of deliberately traumatized children. *Ophthalmology* 1991; **98**: 1124–1127.
- 9 Buys YM, Levin AV, Enzenauer RW, Elder JE, Letourneau MA, Humphreys RP *et al*. Retinal findings after head trauma in infants and young children. *Ophthalmology* 1992; **99**: 1718–1723.
- 10 Bernard PA, Johnston C, Curtis SE, King WD. Toppled television sets cause significant pediatric morbidity and mortality. *Pediatrics* 1998; **102**: E32.
- 11 DiScala C, Barthel M, Sege R. Outcomes from television sets toppling onto toddlers. *Arch Pediatr Adolesc Med* 2001; **155**: 145–148.
- 12 Scheidler MG, Shultz BL, Schall L, Vyas A, Barksdale Jr EM. Falling televisions: The hidden danger for children. *J Pediatr Surg* 2002; **37**: 572–575.
- 13 Klein JG. Five pitfalls in decisions about diagnosis and prescribing. *BMJ* 2005; **330**: 781–783.

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**Sir,
Response to Drs Lantz and Stanton**

We read with interest the comments made by Drs Lantz and Stanton and thank them for their interest in our work.

- (1) Retinosis is a term, which means splitting of the retina. This is an objective finding readily identified on standard histological preparations of the retina. Although we certainly agree with Drs Lantz and Stanton that the well-known and documented association with abusive head trauma was first described in 1986, the actual identification of the histological finding could have been made by histological examination for many years before. The ocular findings were assessed simply by having an ophthalmic pathologist examine the eyes and record what was observed. Likewise, the ophthalmic findings in the nine fatalities, where there were no folds or retinoschisis, do not require peer review any more than any clinical findings in the literature. The slides were prepared according to the protocol¹ and review. We reported the result and it was peer reviewed for publication.
- (2) Although clinically insignificant, we thank Drs Lantz and Stanton for indicating our error in citing crush injuries as the 9th most common cause for injury in