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Evidence for the Effectiveness of Interventions for Congenital, Infantile and Childhood Cataract

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Introduction

Certain groups are often excluded from trials of new interventions, typically pregnant women and children, but also people unable to give informed consent. Children are not included perhaps because of a distaste for ‘experimenting’ on little ones and a reluctance to admit to clinical uncertainty when faced with anxious parents.

Unfortunately such attitudes lead to continuing uncertainty about the effectiveness of key interventions in these population subgroups who are often, ironically, the subject of our special concern.

Cataract in children is an important cause of childhood blindness and treatment can make a difference if it can be delivered effectively and in time. But there are many questions about how this is best achieved – clinical questions which need good evidence for an answer. And before addressing these, there are others – about how best to detect cataracts in babies (there are no randomised trials as yet) and whether or not there is any potential for prevention. Immunisation for rubella is relevant, and, of course, understanding genetics.

Treatment of Bilateral Cases

There are numerous surgical procedures described for the treatment of cataract including peripheral iridectomy (for central opacities), needle and aspiration, lensectomy, optic captured posterior chamber intraocular lens after phaco-emulsification (termed ‘bag in the lens’ procedure) by one group. So what is the best procedure in terms of visual outcome, short and long term complications and cost-effectiveness?

A Cochrane Systematic review was published in 2001 asking the question “What is the effectiveness of surgical interventions for bilateral congenital cataract”. As in most Cochrane reviews, only the best evidence was included, i.e. randomised controlled trials. Only one trial was found comparing pars plana lensectomy to lens aspiration and primary capsulotomy. Though both groups did well in terms of visual outcome, there were more complications in the aspiration group but follow-up was not long enough to address the important concern about late glaucoma after lensectomy. The review is now in the process of being updated. Since it was published, clinical practice has been changing and lens implantation in the bag with or without primary posterior capsulotomy or with capture of the optic within anterior and posterior capsulorhexis is becoming more common. The age at which surgeons are happy to intervene is also falling.

The situation is made more complex by the fact that several different parameters are being modified simultaneously so that it is hard to determine which are the key components to improved outcome.

Since 2001, seven new trials have so far been identified including one large one from China comparing acrylic and polymethyl methacrylate lenses (though it is not clear if this was truly randomised) and four on various aspects of technique relating to optic capture. The other two are on the use of trypan blue for capsulorhexis and a comparison of two methods of hydrodissection.

Treatment of Unilateral Cases

The treatment of unilateral congenital cataract is another question and is the subject of much discussion though so far there are no trials. A study examining the feasibility of randomising children in USA to intraocular lens or contact lens correction of aphakia has been published in the Journal of American Association of Pediatric Ophthalmology and Strabismus (AAPOS). This article also describes the considerable amount of stress that such interventions place on both the child and parents when the results of preserving useful sight in the cataractous eye are not great.

The treatment of stimulus deprivation amblyopia in both unilateral and bilateral cases is also in need of good evidence of effectiveness and a title for a Cochrane review on this subject has been registered.

Conclusion

This remains an issue of intense importance in the control of childhood blindness and, as
Evaluation of screening procedures for congenital cataracts

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U Kugelberg   A Lundvall
E Maly          K Tornqvist
M Abrahamsson  B Andreasson
MP Borres       U Broberger
L Hellstrom-Westas    R Korufalt
N Nelson         J Sjostrand
K Thiringer

AIM: To evaluate the efficacy of two different Swedish screening procedures for early detection of congenital cataracts in comparison with no screening. METHODS: Children born between January 1992 and December 1998 in Swedish regions with an established eye-screening routine.

Outcome of lens aspiration and intraocular lens implantation in children aged 5 years and under

I Cassidy  J Rahi
K Nischal     I Russell-Eggitt
D Taylor

AIMS: To determine the visual outcome and complications of lens aspiration with intraocular lens implantation in children aged 5 years and under. METHODS: The hospital notes of all children aged 5 years and under, who had undergone lens aspiration with intraocular lens implantation between January 1994 and September 1998, and for whom follow up data of at least 1 year were available, were reviewed.

Is early surgery for congenital cataract a risk factor for glaucoma?

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D Taylor       I Russell-Eggitt
J Rahi

AIMS: To estimate the risk of aphakic glaucoma after lensectomy for congenital cataract and its association with surgery within the first month of life. METHOD: A retrospective case note review was conducted of all patients who had lensectomy for congenital cataract during their first year of life at Great Ormond Street Hospital between 1994 and 1997. Patients with pre-existing glaucoma, anterior segment dysgenesis, and Lowe syndrome were excluded. The risk of aphakic glaucoma after surgery was estimated using Kaplan-Meier survival analysis. RESULTS: 80 patients, undergoing 128 lensectomies were eligible. Of these, six patients (nine eyes) were lost to follow up. Based on eye count, the risk of glaucoma by 5 years after lensectomy was 15.6% (95% CI 10.2 to 23.4). Based on patient count, the 5 year risk of glaucoma in at least one eye following bilateral surgery was 25.1% (95% CI 15.1 to 40.0). The incidence of glaucoma remained at a constant level for the first 5 years after surgery. After early bilateral lensectomy, within the first month of life, the 5 year risk of glaucoma in at least one eye was 50% (95% CI 27.8 to 77.1) compared to 14.9% (95% CI 6.5 to 32.1) with surgery performed later (log rank test, p = 0.012).

There was no significant difference (Kolmogorov-Smirnov test: unilateral lensectomy p = 0.587, bilateral lensectomy p = 0.369) in 5 year visual outcomes between eyes operated before and after 1 month of age. CONCLUSION: Bilateral lensectomy during the first month of life is associated with a higher risk of subsequent glaucoma than with surgery performed later. The reason for this is unclear but it may be prudent, in bilateral cases, to consider delaying surgery until the infant is 4 weeks old. As the incidence of glaucoma is similar for each year after surgery, long term glaucoma surveillance is mandatory.