Common Eye Problems in Children

WARREN A. WILSON, *M.D.*, Los Angeles

• Most penetrating or lacerating injuries of the eye in children justify examination under anesthesia to avoid further harm to an uncooperative patient. The pediatrician in doubt should merely apply a sterile dressing and have an ophthalmologist examine the injury in hospital. Nonperforating injuries may result in severe bleeding 48 to 72 hours later; this may be averted by bandaging the eyes and maintaining rest for four or five days. Removal of foreign bodies should be followed by application of antibiotic ointment and patching to prevent contamination.

Congenital stenosis of the lacrimal duct may clear spontaneously or through application of decongestants and sympathomimetic drops. More severe effects, especially infection, justify probing at six months or earlier. The operation should be done under general anesthesia, preferably in hospital.

Acute conjunctivitis is best treated by local application of antibiotics or sulfonamides only. Chronic infections may be better managed with the addition of corticosteroids, which reduce local inflammation and control bacterial reaction. Bacterial study should be done only if empirical antibiotic therapy fails. Bacterial desensitization may be helpful. The same methods are effective in blepharitis, aided by hygienic measures. Corticosteroids are most useful in allergic inflammations.

Refractive difference is difficult to test before a child can read, and apparent defects may be due to lack of cooperation. Marked inequality of the eyes may signify organic disorder. Strabismus, on the other hand, can be detected as early as 12 or 15 months and should be treated as early as possible by proper lenses, surgery, or both. Pediatricians and parents should be aware that many children appear to have strabismus because of wide epicanthi and deep-set eyes.

PEDIATRICIANS know better than anyone else that a child is as much an individual as an adult. A docile child will submit to an amazing amount of handling and instrumentation of the eyes, but often the ophthalmologist's first examination of a child is also their first meeting. Therefore he knows nothing about the temperament of the small patient, who may be in pain, is usually frightened, and distrusts a strange physician surrounded by bizarre equipment. If the confidence of the child is obtained, an adequate examination can be performed.

In the case of a penetrating injury or laceration of the globe, it is much better to put the child in a hospital and examine the injury under anesthesia, with adequate preparation for operation. Forceful retraction of the lids by either the ophthalmologist or the pediatrician may mean the difference between saving and losing the eye and therefore justifies anesthesia. If the eyelid is lacerated the hemorrhage often precludes an adequate examination of the globe, and since repair of the lid must be done under anesthesia, the eyeball can be examined then for evidence of injury.

The pediatrician in doubt about an ocular laceration should do nothing—instill no drops or ointment, nor force open the lid. Sterile pads should be lightly taped over both eyes, the child kept on his back during transfer to the hospital.

Nonperforating injuries of the globe may result in extravasation of blood into the chamber; if so, both eyes should be bandaged and the child should be put at absolute bed rest, with sufficient sedation, for four to five days. Corticosteroid ointment may be used, but drugs with a contracting or dilating effect on the eye are contraindicated.[4] These precautions often prevent severe bleeding into the anterior chamber—the so-called "eight-ball" hemorrhage—which ordinarily has an onset 48 to 72 hours after injury, with acute secondary glaucoma, excruciating pain in the eye, generalized headache and nausea. This condition demands prompt treatment in hospital to prevent partial or possibly complete loss of vision.

Foreign bodies on the cornea or conjunctiva often can be removed by the pediatrician with a spud or a cotton-tipped applicator after the instillation of tetracaine, but if the child is uncooperative or if considerable manipulation is required, the procedure should be done in hospital under anesthesia. After removal of any corneal foreign body, except the most superficially located, antibiotic ointment should be instilled and the eye patched for 24 hours. Next day the cornea should be stained with Fluorescein to ascertain that epithelialization has occurred. Some ophthalmologists feel that it is better to leave the eye uncovered because profuse tearing keeps the eye clean and washes out any micro-organisms that may have been introduced with the foreign body; but in my experience children are much less

Presented as part of a Symposium on Practical Pediatrics as viewed by various specialties before the Section on Pediatrics at the 88th Annual Session of the California Medical Association, San Francisco, February 22 to 25, 1959.

likely to rub an eye that is patched, and the average child's hands are far from clean most of the time.

Congenital stenosis of the lacrimal duct has been reported in as many as 6 per cent of all children,[3] with half the cases clearing spontaneously in a few weeks or months. Some pediatricians believe in waiting 18 or 24 months before treating, though others would probe when the child is two months old[2] or even earlier.[1] If one or both eyes have constant tearing and intermittent discharge, there is no reason to wait beyond the sixth month, and in cases with chronic infection and profuse discharge the probing should be done even earlier. Although it could be done in the office, it is preferable to operate in the hospital where all possible anesthetic precautions can be taken. In some cases, not in most, probing may have to be repeated.

Probing with local or no anesthesia, and with the infant restrained in a sheet, is common but hazardous. A false passage can be made by this method, and the author has observed three cases in which dacryocystorrhinostomy was later required.

Medical treatment seems to have only limited usefulness, but one method that seems to justify more frequent trial is the application of Neosynephrine® or a similar drug to shrink nasal tissues, with the concurrent application of sympathomimetic eye drops. Because the lacrimal duct is so narrow in the very young infant, a slight reduction of tissue turgor may make a critical difference in the patency of the duct. In most cases so treated, antibiotic salves have been applied and daily massage or expression of fluids used to reduce purulence.

For the many types and degrees of acute and subacute conjunctivitis with running of the eyes or pus, the local application of antibiotics or sulfonamides usually suffices. There is no advantage in the addition of corticosteroids, which may even be dangerous in herpetic keratitis since the corneal ulceration may be stimulated to progress at an alarming rate.

For chronic types of conjunctivitis, though—particularly when the lid is involved—the addition of steroids has proved very beneficial, for it may help to control allergic reaction to bacteria and to reduce the inflammatory condition of lid margins and conjunctiva. Because conjunctival scraping for bacterial study is so unpleasant and often frightening to a child, empirical treatment is justified; but in intractable infections smear and culture studies must be made, and bacterial sensitivity tests also may be very helpful. In particularly stubborn staphylococcal infections, systemic desensitization with staphylococcus toxoid may be added to local treatment.

The usual case of blepharitis or blepharoconjunctivitis can be brought under control in a week with a combination of antibiotic with a corticosteroid, in the dual form of drops administered hourly during the day and ointment applied at night. The mother should be instructed to rub the ointment thoroughly into the base of the cilia with the fingers or with a cotton-tipped applicator. Drops are more agreeable for daytime use, since the ointment tends to melt and run; the soluble corticosteroids are preferable to the suspensions, which leave a white residue at the inner canthus that children of school age often resent. A valuable adjunct in particularly stubborn cases is a regimen of eye hygiene that includes washing the face morning and night with hexachlorophene soap, but this is unsuitable for younger children because the active ingredient, irritating to the conjunctiva and possibly harmful to the cornea must be thoroughly rinsed before the eyes are opened.

For allergic conjunctivitis and the "itching" of the eyes associated with vasomotor rhinitis, corticosteroid solutions are most useful. When a secondary infection is present, the combination with an antibiotic may be indicated. A similar regimen works well in vernal conjunctivitis. In California, which is subtropical and is limited to a dry and a wet season, a concentrated corticosteroid solution or suspension given every hour until symptoms are brought under control is the best treatment devised to date for this annoying condition. After a few days, the frequency of installation can be decreased. During the wet season, when symptoms are much reduced, the milder corticosteroid solutions combined with sympathomimetic drugs and antihistaminics are usually adequate. Because of the rather profuse mucous discharge associated with vernal conjunctivitis, most patients are more comfortable with solutions than with ointments.

The ophthalmologist is often asked for an opinion about preschool vision tests and about the proper time for complete refraction testing. These questions are somewhat related.

About four and a half years seems the ideal age for visual testing; earlier, the child's cooperation and the accuracy of response is doubtful. If at this age his reaction is unsatisfactory, another attempt should be made in three months. For the busy pediatrician, the "E" chart based on the Snellen notation is by far the most satisfactory test device for children under seven years of age, since most children educated by modern methods do not know the alphabet until the second grade. This chart, hung in a hall or treatment room with a range of about 20 feet and reasonable overhead lighting, is quite sufficiently accurate. At the age of four and a half years, 20/40 vision is satisfactory; at five or six years, 20/30 is normal, and 20/20 may not be

attained before seven or eight. An apparent difference of one line between the eyes may be due simply to lack of cooperation and ordinarily is not significant unless other symptoms are present; a difference of two lines usually justifies further investigation.

Decided inequality of the eyes (e.g., 20/30 vision in one and 20/200 in the other) demands immediate attention, for it may signify an intraocular defect or, more commonly, dimness due to disuse (amblyopia ex anopsia). The latter condition is often associated with strabismus, but other causes are probably more common than is realized; in many cases function can be restored if occlusion of the better eye is instituted before the age of six years. If the refractive error is pronounced, spectacles may be needed in addition to patching. Patching should be continued, with monthly checks, for three months or longer.

Refraction study may be necessary when the Snellen test does not rule out borderline myopia or when visual defects are otherwise evidenced.

Since a child's accommodative ability is so great, spectacles are not usually prescribed except for severe hyperopia, astigmatism or myopia. In these cases, not only clarity of vision, but ocular comfort may be obtained by corrective lenses. If the child is very active or particularly interested in sports, glasses can be dispensed with after school or during play hours. Case-hardened lenses, such as safety glasses used in industry, have proved very satisfactory for children. For the past few years, plastic lenses have been available. They are light in weight, unbreakable, and therefore reassuring to parents. The disadvantage is that they are easily scratched.

Glasses are not prescribed for low degrees of myopia if the child is doing satisfactory work in school and has no visual complaints. The parents should be advised that glasses will undoubtedly be needed later, by which time they are psychologically better prepared. An adequate explanation with a few simple diagrams often reassures parents. Because of many articles in lay periodicals, people have become fearful of such terms as "progressive myopia." Once it is understood that all acquired myopia is "progressive" and that it does not in itself lead to blindness, cooperation with the physician is infinitely better.

When to refer a child with strabismus is a problem facing the pediatrician almost daily. As with most medical conditions, the earlier that treatment is begun, the better is the chance for cure; in the first year of life, however, strabismus does not demand attention by an ophthalmologist unless the parents are unduly apprehensive and the pediatrician needs help in reassuring them. Most strabismus, convergent or divergent, develops in the second, third or fourth year of life. Even at 12 to 15 months the angle of squint can be measured and refraction adequately tested.

Strabismus is basically bilateral; when a child with previously normal alignment is noted to have deviation, funduscopic examination should be done promptly, since the turning may be the first symptom of intraocular tumor or other eye disease.

It is doubtful that anyone "outgrows" strabismus, though many persons believe they have done so. They probably had an appearance of strabismus which is quite common in children, especially those with wide epicanthi and deep-set eyes. When a child has this conformation and the pediatrician is in doubt, the ophthalmologist may help to reassure both him and the parents that the case is one of pseudostrabismus.

Most true strabismus can be treated only by correct use of lenses, by surgery, or, in some cases, by a combination of these methods. Occlusion and orthoptics are important adjuncts. Especially in convergence, the squinting eye is often amblyopic, as can be readily demonstrated in older children by acuity tests or evidenced in younger ones by poor fixation of the squinting eye on screening tests. Before operation is possible, the fixing eye must be constantly occluded until good fixation has developed in the other. This process may require two weeks to several months, and in older children it can be followed through periodic checks with the Snellen chart.

Mere alignment of the eyes does not insure binocular vision; orthoptics, on the other hand, is most valuable in teaching fusion but cannot by itself produce alignment. Before the age of four and a half years children generally do not cooperate enough to make orthoptics worthwhile, but from then until the age of seven the method can be most beneficial.

In older children with strabismus, even though one eye may be incurably amblyopic and fusion impossible, operation may be justified for cosmetic reasons alone, for straightening of the eyes can relieve the emotional burden on both patient and parent.

1930 Wilshire Boulevard, Los Angeles 57.

REFERENCES

1. Broggi, R. J.: The treatment of congenital dacryostenosis, Arch. Ophth., 6:30-36, Jan. 1959.

2. Cassady, J. V.: Dacrocystitis of infancy—Review of 100 cases, Arch. Ophth., 39:491-507, April 1948. Dacrocystitis of infancy, Am. J. Ophth., 31:773-780, July 1948.

3. Guerry, D., and Kendig, E. J.: Congenital impatency of nasolacrimal duct, Arch. Ophth., 39:193-204, Feb. 1948.

4. Smith, H. E.: Anterior chamber hemorrhages following nonperforating ocular injuries, Trans. Pacific Coast O. & O., 97-108, 1957.