Residents Research Forum

First Annual Symposium

1993

Sponsored by

Rhode Island Hospital/Brown Medical School Ophthalmology Department
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Exogenous retinal arterial embolus is a rare cause of central retinal artery occlusion. One potential cause is external carotid artery (ECA) particle embolization during which emboli transverse previously unrecognized anastomoses between the ECA and the internal carotid artery. A 64-year-old woman noted sudden loss of vision OD during particle embolization of a sphenoid wing meningioma. Examination revealed vision of counting fingers OD and 20/100 OS, a right afferent pupillary defect and diffuse retinal edema with a cherry red spot OD. An anterior chamber paracentesis was performed. The patient had a rapid improvement in vision to 20/25 within several days. This unusual case highlights the potential catastrophic ophthalmic complications of ECA particle embolization.
**AMBLYOPIA IN CHILDREN WITH DOWN SYNDROME**

*Charles Keller, M.D.*

**Objective:** Amblyopia in Down syndrome has not been well studied. Our study was designed to determine the prevalence and cause of amblyopia in a group of home-reared children with Down syndrome.

**Design:** All children in the study group underwent an evaluation of visual acuity. In addition, previous ophthalmologic records were reviewed and a select group of children were examined at our institution. Amblyopia was defined as a difference of two Snellen acuity lines between the eyes or a clear fixation preference.

**Patients:** Sixty-eight children with Down syndrome between the ages of five and 19 were enrolled in the study.

**Results:** We determined that amblyopia occurred in 15 (22%) of 68 patients. Moreover, an additional 16 (24%) of these patients had bilateral vision less than 20/50. Strabismus and high refractive errors and anisometropia were the most common etiologies for decreased vision and amblyopia.

**Conclusion:** This study suggests that the prevalence of amblyopia and bilateral visual loss is higher than previously reported. Fully 46% of these children with Down syndrome had evidence of significant visual deficits. These patients may be at higher risk for visual impairment and should be carefully examined for ophthalmologic problems.
GROUP B STREPTOCOCCAL METASTATIC ENDOPHTHALMITIS

Henry P. Nagelberg, M.D.

Group B β-hemolytic streptococcus (Streptococcus agalactiae) is most commonly associated with infection in the neonatal and postpartum periods; it is the most common cause of neonatal sepsis and meningitis in the United States. Although less common, it is a significant cause of morbidity and mortality in adults with underlying medical conditions.

Group B streptococcal metastatic endophthalmitis is extremely unusual and has only been reported once in the American literature. We describe two patients with Group B streptococcal metastatic endophthalmitis. One patient had a history of diabetes mellitus who developed bilateral metastatic endophthalmitis following prolonged polymicrobial food infection. The other patient had a history of HIV infection and splenectomy for immune thrombocytopenic purpura who developed meningitis and endophthalmitis coincidentally. Each received intravenous penicillin G and had severe loss of vision.

Group B β-hemolytic streptococcus is an important pathogen to consider in patients with underlying medical conditions who develop metastatic endophthalmitis.
VISUAL LOSS AS A LONG-TERM SEQUELAE OF HIGH ALTITUDE RETINOPATHY

Geoffrey C. Tabin, M.D.

The detrimental effects of prolonged exposure to high altitude leads to a wide spectrum of clinical conditions ranging from acute mountain sickness and chronic mountain sickness to retinopathy and the often fatal cerebral edema and pulmonary edema of high altitude. The effects of these altitude illnesses have been believed to resolve completely with no residual deficits after returning to conditions of increased atmospheric pressure. We report three cases of continued visual loss after altitude-induced retinal hemorrhages.

Sojourners to high altitude have developed numerous physical ailments that have been variously classified but are now believed to be part of a continuous pathophysiologic spectrum. The authors previously reported and proposed a classification system for the ocular manifestations of altitude disease. We now report three patients with decreased activity and visual field loss two years after return to sea level.
LONG-TERM ASTIGMATIC CHANGE IN SUTURELESS SMALL INCISION CATARACT SURGERY

Daniel Petashnick, M.D.

Studies to date have not followed the long-term natural history of corneal astigmatism in small incision sutureless cataract surgery. We followed 78 patients who underwent such surgery by a single surgeon, using a 5mm incision, 3mm posterior to the vascular arcades, and a 5 x 6mm IOL, for two years. Our study demonstrated no statistical differences in the total amount of pre-operative cylinder (.99+/-.77) compared to one week (1.386 +/- .949), one month (1.16 +/- .91), three months (1.4 +/- .84), and two years (1.316 +/- .90). In addition, the change in cylinder (k2-K1) compared to the pre-operative value, was not significantly different at one week (.272 +/- .74) or two years (.23 +/- .49). Vector analysis demonstrated persistent with the rule change through two years. This differs significantly from the typical against the rule shift seen in large incisions over time. These data show the efficacy of sutureless cataract surgery in minimizing post-operative astigmatic change.
COMPARISON OF THE AXIS OF ASTIGMATISM OF SUBJECTS IN THE SEATED AND SUPINE POSITIONS

Eugene M. Smith, M.D.

Purpose: Determination of astigmatic error and axis is obtained with patients in the seated position while excimer laser surgery and radial keratotomy are done with subjects in the supine position. A change in axis relative to patient position while performing excimer or kerato-refractive surgery could result in improper treatment of astigmatic refractive error and yield a poor visual outcome.

Methods: Forty-one eyes of 24 subjects were enrolled in our study. Two different methods were used in this study to ascertain whether a globe undergoes torsion when a subject moves from a seated to supine position. In both methods, the subject’s best visual acuity was determined using phoropter refraction and their correction was placed in a set of trial frames using plus cylinder. The axis of astigmatism was determined in 21 eyes by having the subjects “dial in” their axis in both the seated and supine positions. The Jackson cross cylinder technique was used as a second method to determine the subject’s axis of astigmatism in 20 eyes.

Results:

<table>
<thead>
<tr>
<th>METHOD</th>
<th># of Eyes</th>
<th>Mean extorsion ± SD</th>
<th>ρ value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jackson cross cylinder</td>
<td>20</td>
<td>0.25° ± 2.9°</td>
<td>0.70</td>
</tr>
<tr>
<td>Dial</td>
<td>21</td>
<td>1.75° ± 5.1°</td>
<td>0.12</td>
</tr>
</tbody>
</table>

Conclusions: the necessary precision in the alignment of the excimer laser with the patient’s actual axis of refractive astigmatism is unknown. Our study revealed no significant induced ocular intorsion or extorsion by measuring the change in the axis of astigmatism relative to body posture.