Aphakic Glaucoma after Paediatric Cataract Surgery

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Abstract

Background: To study the development of aphakic glaucoma and other complications after congenital cataract surgery.

Methods: In this descriptive study 30 children, from 4 months to 2 years of age, with cataract were enrolled. Patients with ocular trauma, congenital glaucoma, anterior segment dysgenesis, posterior segment abnormalities and retinopathy of prematurity were not included in this study. Anterior and posterior segment examination, retinoscopy, keratometry and ultrasonosgraphy were done to assess retinal status. Pupils were dilated using cyclopentolate 1% and phenylephrine 10%, at 90, 60, 30 and 15 minutes preoperatively. Surgical procedures included anterior capsulotomy/anterior continuous curvilinear capsulorhexis, irrigation and aspiration of lens matter, posterior capsulotomy or posterior continuous curvilinear capsulorhexis, anterior vitrectomy, 0.1 c.c intravitreal dexamethasone injection. All cases remained on topical steroids and cycloplegic eye drops for six weeks. Patients were followed on first postoperative day and first postoperative week for detection of early postoperative complications. Then patients were followed after three months, six months and one year. In every visit patients were evaluated including funduscopy, cycloplegic retinoscopy and record of intraocular pressure.

Results: A total 30 eyes of 30 patients were evaluated before surgical intervention. There were 22 male and 8 female patients. Age range was between 4 months to 2 years. Aphakic glaucoma was observed in 7% of patients. Posterior capsular opacification was seen in 64% (Table 1). There were no reported intraoperative complications. After cataract surgery, all eyes were treated with corticosteroids and antibiotic eyedrops for eight weeks. Postoperatively there were no case of corneal decompensation or endophthalmitis.

Conclusion: Aphakic glaucoma is higher in patients who were operated within twelve months of age for congenital cataracts.

Key Words: Congenital cataracts, Posterior capsular opacification, Aphakic glaucoma.

Introduction

Aphakic glaucoma is the most common complication of congenital cataract surgery, the incidence of this complication after cataract surgery varies from 5% to 41%. Eyes with cataract diagnosed at an early age are at higher risk of developing glaucoma which lead to worse visual prognosis and blindness. There are number of factors which are responsible for development of aphakic glaucoma. Surgery within the first year of life, corneal diameter less than 10 mm, association with other ocular disorders, persistent hyperplastic vitreous and retained lens. Pupillary blocks was once the leading cause of glaucoma. Acute angle closure rarely occurs in aphakic patients after recent advancement in surgery, open angle glaucoma occurs more frequently.

Another important factor in children is retained ophthalmic viscoelastic substances which can cause marked postoperative intraocular pressure elevation after surgery for childhood cataracts. Trividi and Wilson have suggested the need for more meticulous removal of ophthalmic viscoelastic substances. Different treatment options are available for aphakic glaucoma like anti-glaucoma medications, laser or surgical peripheral iridectomy, valve implantation, trabeculectomy or trabeculectomy with antimetabolites and cyclodestructive procedures.

It is responsibility of an ophthalmologist to assess postoperative glaucoma in children left aphakic or pseudophakic to prevent amblyopia and blindness. It is essential to examine the patient on a regular basis after uneventful infantile cataract surgery. It has been noted that treatment of aphakic glaucoma is a challenge to ophthalmologists, patients and parents in term of control of intra-ocular pressure, visual development and rehabilitation in the developing world.
Patients and Methods

This descriptive study was conducted in Department of Ophthalmology, Services Hospital Lahore, affiliated with Services Institute of Medical Science, Lahore from 21.7.2008 to 26.5.2013. A total of 30 eyes of 30 patients were evaluated before surgical intervention. There were 22 male and 8 female patients. Age range was between 4 months to 2 years. Patients with ocular trauma, congenital glaucoma, anterior segment dysgenesis, posterior segment abnormalities and retinopathy of prematurity were not included in this study. Anterior and posterior segment examination, retinotomy, keratometry and ultrasonography were done to assess retinal status. Pupils were dilated using cyclopentolate1% and phenylepherine10%, at 90, 60, 30 and 15 minutes preoperatively. Surgical procedures included anterior capsulotomy/ anterior continuous curvilinear capsulorhexis, irrigation and aspiration of lens matter, posterior capsulotomy or posterior continuous curvilinear capsulorhexis, anterior vitrectomy and 0.1c.c intravitreal dexamethasone injection. All cases remained on topical steroids and cycloplegic eye drops for six weeks. Patients were followed on first postoperative day and first postoperative week for detection of early postoperative complications. Then patients were followed after three months, six months and one year. In every visit patients were evaluated including fundoscopy, cycloplegic retinoscopy and record of intraocular pressure.

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### Table 1. Cataract surgery in children-Complications

<table>
<thead>
<tr>
<th>Complication</th>
<th>%</th>
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<tbody>
<tr>
<td>Posterior capsular opacification</td>
<td>64%</td>
</tr>
<tr>
<td>Aphakic glaucoma</td>
<td>7%</td>
</tr>
<tr>
<td>Striate Keratitis</td>
<td>10%</td>
</tr>
<tr>
<td>Fibrinous reaction</td>
<td>10%</td>
</tr>
<tr>
<td>Hyphaema</td>
<td>8%</td>
</tr>
<tr>
<td>Retinal Detachment</td>
<td>0%</td>
</tr>
</tbody>
</table>

Discussion

The prevalence of aphakic glaucoma in children after cataract surgery varies between 5% and 41%. Cataract extraction at an early age especially during the first year of life increases the risk for aphakic glaucoma. The non-modifiable risk factors include anatomic or physiologic predisposition of the eye, microcornea, microphthalmos, type of cataract, poor pupillary dilation and genetic predisposition. Other risk factors include retained cortex, residual lens particle and protein, uveitis, need for secondary surgery poor vasculature or supporting structures of the optic nerve, corticosteroids, blockage of the angle by vitreous and vitreous factors altering trabecular meshwork structure and maturation. It is controversial whether there is specific time during the first year of life when having cataract surgery is associated with decreased risk for developing aphakic glaucoma.

Risk of aphakic glaucoma decreases if the cataract surgery is performed after 9 months of age. Late- onset open angle glaucoma occurred predominantly in children who underwent cataract extraction during the first week of life. Johnson and Keech noted that while glaucoma develops in approximately one-third of their patients within few months following cataract surgery, in the remaining two-third, glaucoma developed several years after surgery. Glaucoma following cataract surgery in children is reported after 3-6 years by Chrousos et al. Mazhar et al noted aphakic glaucoma in 4% of patients with lens matter aspiration and anterior vitrectomy. Their study shows similar results to our study. He suggested that the variability in the incidence rate of aphakic glaucoma is due to differences in the patient population, the type of cataract, the age of surgical correction and the length of follow-up.

The main reason for aphakic glaucoma is widely unknown. It has been suggested that developing infant’s angle can get damaged by surgical trauma that can increase the intraocular pressure. In our study there was no significant increase in intraocular pressure after cataract surgery. Our study is similar to Zwaan et al who found it in 1% of cases but our study did not match with Vishwanath et al who has reported that 50% of children developed aphakic glaucoma after congenital cataract surgery.

Conclusion

1. Aphakic glaucoma is associated with early age of cataract surgery.
2. Diagnosis of glaucoma following congenital cataract surgery requires sustainable surveillance and continuous assessment of the disorder.

References