

**ORIGINAL ARTICLE****Assessment of ultrasonographic findings in patients with cataract**

Mukesh Kumar

Assistant Professor, Department of Radio Diagnosis, Hamdard Institute of Medical Sciences & Research, New Delhi, India

**ABSTRACT:**

**Background:** Cataracts are a common eye condition characterized by clouding of the lens inside the eye, leading to impaired vision. They can occur in individuals of all ages, including pediatric patients, but are more commonly associated with aging. The present study was conducted to assess ultrasonographic findings in patients with cataract. **Materials & Methods:** 76 patients diagnosed with cataract of both genders were subjected to fundoscopy, biomicroscopy, tonometry, and visual acuity testing. Patients were assessed using ultrasound when the standard approach was unable to evaluate the fundus of the eye because of a high degree of lens opacity. Ultrasonographic ocular examination was performed. All patients were submitted to both A- and B-mode ultrasound. Using contact gel for ultrasonography, the examinations were performed on the patient in the horizontal dorsal decubitus position with the transpalpebral approach. Before the examination, the patient's eyes were treated with tetracaine ophthalmic drops. A methodical examination was conducted, assessing the ocular globe in all quadrants using longitudinal, axial, and transverse ultrasonic slices. **Results:** Out of 76 patients, males were 46 and females were 30. No changes were seen in 15, retina detachment in 7, intorflexion of the sclera in 5, staphylomas in 4, retinoschisis in 7, vitreoschisis in 8, posterior vitreous detachment in 23, and vitreous opacities in 7 cases. The difference was significant ( $P < 0.05$ ). **Conclusion:** The relevance of using ultrasonography during ocular evaluation is demonstrated by the way it revealed and distinguished between eyes with cataracts and eyes with ocular abnormalities other than cataracts as the reason of poor vision.

**Keywords:** Cataracts, fundoscopy, USG

**Corresponding author:** Mukesh Kumar, Assistant Professor, Department of Radio Diagnosis, Hamdard Institute of Medical Sciences & Research, New Delhi, India

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**INTRODUCTION**

Cataracts are a common eye condition characterized by clouding of the lens inside the eye, leading to impaired vision. They can occur in individuals of all ages, including pediatric patients, but are more commonly associated with aging. Cataracts can affect one or both eyes and may develop gradually over time or progress more rapidly.<sup>1</sup>

Most cataracts develop as a result of aging and changes in the structure of the lens over time. Some infants are born with cataracts or develop them shortly after birth.<sup>2</sup> Congenital cataracts may be inherited or caused by prenatal infections, metabolic disorders, or genetic abnormalities. Cataracts can develop following eye injuries or trauma, such as blunt force trauma or penetrating injuries. Cataracts may occur as a result of other eye conditions (e.g., uveitis), medical conditions (e.g., diabetes), exposure to certain medications (e.g., corticosteroids), or prolonged exposure to ultraviolet radiation.<sup>3</sup>

Thanks to technological advancements, surgical methods for treating cataracts have significantly improved over the past few decades.<sup>4</sup> As a result, there have been cost savings and more consistent and positive outcomes. However, a sizable section of the populace in poorer nations lacks access to these processes. Among the supplementary tests utilized to clarify the diagnosis, ultrasonography surely had a significant impact on the treatment plan.<sup>5</sup> Even on

young patients, ultrasound is a painless, non-invasive imaging technique that can be performed in a doctor's office. To choose the best surgical procedure for patients with opacities, an ultrasonic examination of the posterior pole is essential.<sup>6</sup> The present study was conducted to assess ultrasonographic findings in patients with cataract.

**MATERIALS & METHODS**

The present study consisted of 76 patients diagnosed with cataract of both genders. All gave their written consent to participate in the study.

Data such as name, age, gender etc. was recorded. Anamnesis was used in the initial evaluation of the patients to identify those who may have had a cataract. Following that, the patients received a thorough clinic evaluation that included fundoscopy, biomicroscopy, tonometry, and visual acuity testing. Patients were assessed using ultrasound when the standard approach was unable to evaluate the fundus of the eye because of a high degree of lens opacity. Ultrasonographic ocular examination was performed. All patients were submitted to both A- and B-mode ultrasound. Using contact gel for ultrasonography, the examinations were performed on the patient in the horizontal dorsal decubitus position with the transpalpebral approach. Before the examination, the patient's eyes were treated with tetracaine ophthalmic drops. A methodical

examination was conducted, assessing the ocular globe in all quadrants using longitudinal, axial, and transverse ultrasonic slices. These examinations were

conducted by skilled ultrasonographic physicians. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 76		
Gender	Male	Female
Number	46	30

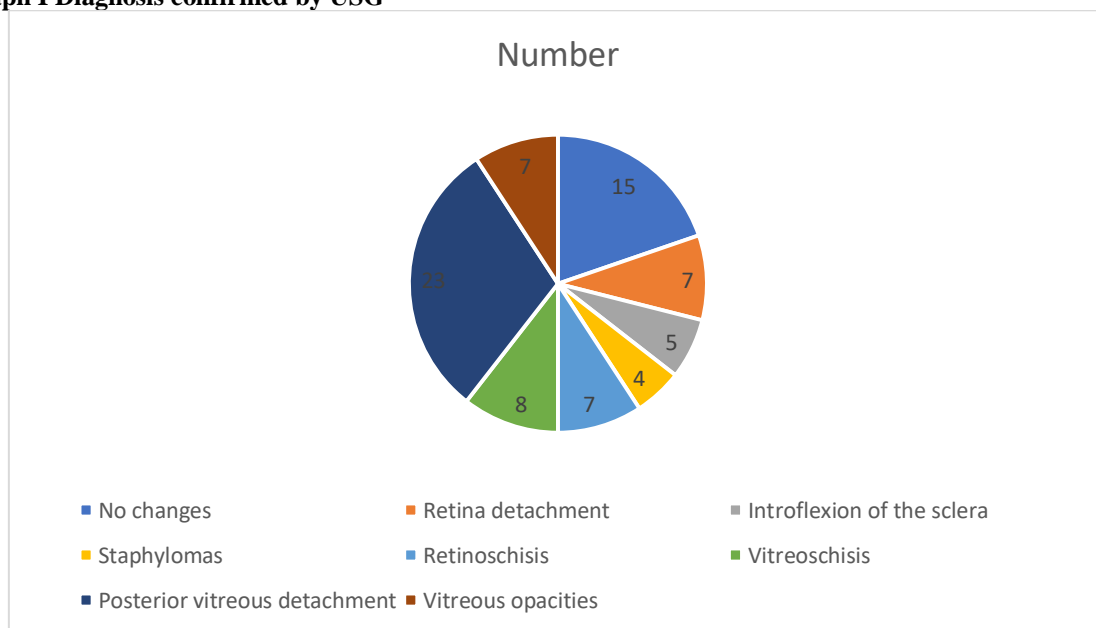
Table I shows that out of 76 patients, males were 46 and females were 30.

**Table II Diagnosis confirmed by USG**

Diagnosis	Number	P value
No changes	15	0.05
Retina detachment	7	
Introflexion of the sclera	5	
Staphylomas	4	
Retinoschisis	7	
Vitreoschisis	8	
Posterior vitreous detachment	23	
Vitreous opacities	7	

Table II, graph I shows that no changes were seen in 15, retina detachment in 7, introflexion of the sclera in 5, staphylomas in 4, retinoschisis in 7, vitreoschisis in 8, posterior vitreous detachment in 23, and vitreous opacities in 7 cases. The difference was significant (P< 0.05).

**Graph I Diagnosis confirmed by USG**



**DISCUSSION**

It is noteworthy that the potential acuity meter (PAM) can be utilized to measure post-operative visual acuity in cases with lens opacity.<sup>7</sup> Prior to cataract surgery, the PAM is a crucial test that needs to be performed, particularly in cases when standard optic methods cannot evaluate the ocular fundus, primarily the macular area.<sup>8</sup> However, this ocular test is only helpful in determining potential acuity in cases in which the lens does not have any noticeable opacities. This is why cataract campaigns often do not employ the PAM.<sup>9,10</sup> The present study was conducted to

assess ultrasonographic findings in patients with cataract.

We found that out of 76 patients, males were 46 and females were 30. Mendes et al<sup>11</sup> evaluated the ultrasonographic records of patients with advanced cataracts who were examined during cataract campaigns. A total of 289 eyes from 215 patients were examined. Of the eyes examined, 77.5% presented with findings in the vitreous cavity and the posterior pole. A posterior vitreous detachment with no other complications was observed in 47.4% of the eyes. The remaining 30.1% presented with eye diseases that

could result in a reduced visual function after surgery. The most frequent eye diseases observed were diffuse vitreous opacity (12.1% of the eyes) and detachment of the retina (9.3% of the eyes).

We found that no changes were seen in 15, retina detachment in 7, intorflexion of the sclera in 5, staphylomas in 4, retinoschisis in 7, vitreoschisis in 8, posterior vitreous detachment in 23, and vitreous opacities in 7 cases. Anteby et al<sup>12</sup> 509 patients with thick cataracts who were submitted for routine globe ultrasound examinations were examined retrospectively. A history of eye surgery or traumatic trauma, as well as being younger than eighteen, were exclusion factors. Every patient had a B-scan and a standardized A-scan ultrasound assessment. The ultrasonography examination identified a posterior segment disease in 19.6% of the patients. Retinal detachment (4.5%), vitreous hemorrhage (2.5%), and posterior staphyloma (7.2%) were the most often reported disorders. It was determined that one patient had a sizable choroidal malignant melanoma. Patients with a history of ocular trauma had a slightly greater prevalence of posterior region diseases (29.6% versus 19.0%, respectively;  $P = .1$ ) than the nontraumatic cataract group. There was an increase in the occurrence of retinal detachment. In the traumatic cataract category, the prevalence of retinal detachment was higher (14.8% vs. 3.9%), however this difference was not statistically significant.

Hennig et al<sup>13</sup> forty-two (10.8%) children were studied. Intraocular lens (IOL) implantation with posterior capsule opening and anterior vitrectomy were achieved in 386 (99.0%) children bilaterally. Median age at surgery was 7 years and 69.2% were male. At first presentation, 243 (62.3%) of the children were blind (< 3/60 in the better eye). After more than 1 year, 53.5% had a normal visual status (range: 6/6 to 6/18), 5.6% of children were still blind, and mean refractive error spherical equivalent was  $+1.0 \pm 2.4$  diopters. Astigmatism changed from suture-induced with the rule at discharge to against the rule within 3 weeks of surgery. Mean long-term astigmatic error was  $1.0 \pm 0.9$  diopters after 1 year. Glaucoma was rare. Even in a setting with limited resources, successful, cost-effective, high-volume surgery for pediatric cataract is possible. Despite late presentation and limited follow-up, more than half achieved good outcomes after more than 1 year. According to Corrêa et al<sup>14</sup>, posterior vitreous detachment was most commonly found using ultrasound (26.1%), followed by retina detachment (9.7%) and vitreous hemorrhage (8.6%)

The limitation of the study is the small sample size.

## CONCLUSION

Authors found that the relevance of using ultrasonography during ocular evaluation is demonstrated by the way it revealed and distinguished between eyes with cataracts and eyes with ocular abnormalities other than cataracts as the reason of poor vision.

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