

Incidence of Cystoid Macular Edema in Non-Diabetic Patients

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Abstract:

Background and Objective: To study the epidemiology of cystoid macular edema in Non Diabetic Patients

Materials and methodology: This study was conducted at Department of Ophthalmology, Chalmeda Ananda Rao Institute Of Medical Sciences from August 2019 to January 2020 . 50 patients fulfilling the inclusion and exclusion criteria were included in the study. All patients were subjected to detailed systemic and ophthalmic evaluation. Relevant systemic investigations like FBS, PPBS, BP Sr. Cholesterol, Sr.creatinine, Complete Blood Picture were done.

INCLUSION CRITERIA: Pseudo-phakic cystoid macular edema, Cystoid macular edema due to vein occlusions, Patients with other pre-existing macular degenerations due to causes like ARMD, RP, etc.

EXCLUSION CRITERIA: All Diabetic Patients, Patients on systemic corticosteroid therapy.

Results: Out of 50 patients Macular Edema is seen in Pseudo phakic's – 38.7%, Retinal vein occlusion -25.8% , ARMD – 22.5%, Aphakic 3.2%, Chronic Uveitis – 9.6%

Conclusions: Cystoid macular edema presented mostly in the 5th and 6th decade with slight male preponderance. This study describes pseudophakic macular edema as the leading Etiology with significant association of CME was found with posterior capsular rent. About 30% of CME developed in uneventful intra and post-operative period. A total of 30 eyes accounting for 48.3% had either complete or incomplete PVD. Remaining 32 Eyes(51.7%) did not have PVD.

Key Word: Cystoid Macular edema, Pseudophakia, Aphakia, Posterior Vitreous Detachment, Age Related Macular Degeneration (ARMD)

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I. Introduction

Cystoid macular edema is an accumulation of fluid in cyst like spaces within the macula in the outer plexiform layer. It is a common pathological response to a wide variety of ocular insults. It is thought that prostaglandin secretion and vascular endothelial damage causes fluid accumulation in the relatively loose intercellular adhesions of outer plexiform layer which permits the formation of cystoid spaces.

Aphakic and Pseudophakic cystoid macular edema, commonly referred to as Irvine-Gass syndrome, has been recognised as a distinct entity since 1953 after its description by Irvine and Gass and by Norton in 1966. It is one of the most frequent and troublesome problem following cataract surgery. With recent improvements in sutures, instruments, techniques and antibiotic therapy, loss of central vision secondary to changes in macula following uneventful cataract extraction has received recognition as a major complication of cataract surgery.

With intra capsular cataract surgery (ICCE), the rate of postoperative macular oedema was around 2–20%, whereas it decreased to 1–2% with the widespread use of extra capsular cataract extraction (ECCE) with intact posterior capsule. Modern cataract surgery with phacoemulsification, self-sealed corneal incision and implant of foldable intraocular lens (IOL) in the capsular sac seem to have reduced considerably the prevalence of angiographic as well as clinical CME.^{1,2}

II. Materials and Methodology

A total of 62 eyes of 50 subjects (nondiabetic) aged between 30 and 80 with a male to female ratio of 1.9:1 have participated in the study. Permission was obtained from ethical committee of the institute. An informed consent was obtained from subjects willing to participate in the study. All patients were subjected to detailed systemic and ophthalmic evaluation. Relevant systemic investigations like FBS, PPBS, BP were done.

All subjects underwent baseline examination to rule out any abnormality in the eyes. Unaided, aided and pinhole visual acuity was recorded for distance with Snellen’s distant visual acuity chart at 6 meters. Refraction was performed objectively and subjectively with dilated and un-dilated state. Slit lamp evaluation was done to rule out any anterior segment abnormality and for grading of cataract. IOP was measured by Goldman applanation tonometer. Detailed examination of the posterior segment was done with +90 D lens and indirect ophthalmoscope by using +20 D lens. Fundus fluorescein angiography was done in all cases to look for flower petal leakage from perifoveal capillaries in macular region. Optical coherence tomography was done in all cases to look for type of macular edema, central macular thickness.

III. Results

In this study, 62 eyes of 50 subjects were examined for the evaluation of incidence of CME and following assessments were performed. Total 62 eyes were compared in this study.

[Table 1] showed Age Distribution in non-diabetics. [Table 2] showed Sex Distribution. [Table 3] showed Laterality. [Table 4] showed Causes of CME. [Table 3] showed Associations with PVD

AGE DISTRIBUTION

Total patients enrolled in our study is 50.

Table 1

Age (in years)	No: of Patients	Percentage
31-40	6	12%
41-50	7	14%
51-60	16	32%
61-70	13	26%
71-80	8	16%

Majority of patients in this study were in the age group of 51-70 years (58%).The oldest patient was 78 years and the youngest was 31 years.

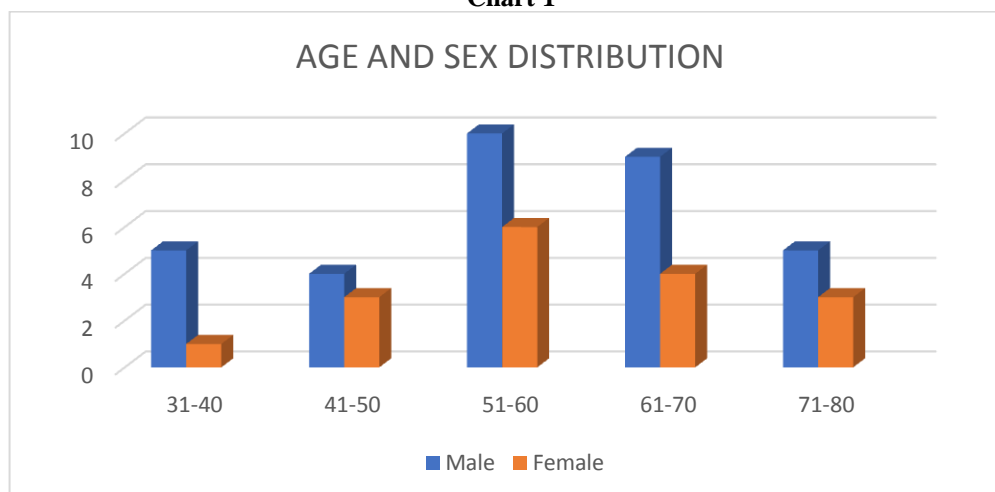
SEX DISTRIBUTION

Table 2

SEX	No: of Patients	Percentage
Male	33	66%
Female	17	34%

In this study, there was a slight male preponderance, males accounting for 66% of patients. Majority of them were in 51 -60 years age group.

Chart 1

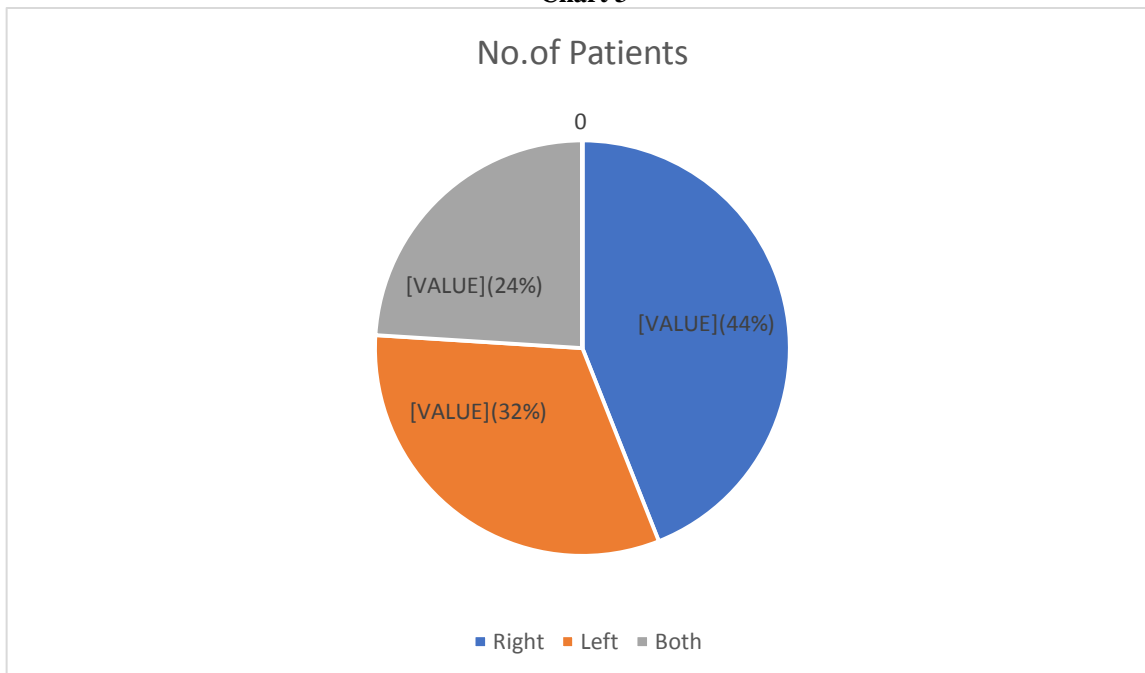


LATERALITY

Table 3

Eye	No. of Patients	Percentage
Right	22	44%
Left	16	32%
Both	12	24%

Chart 3



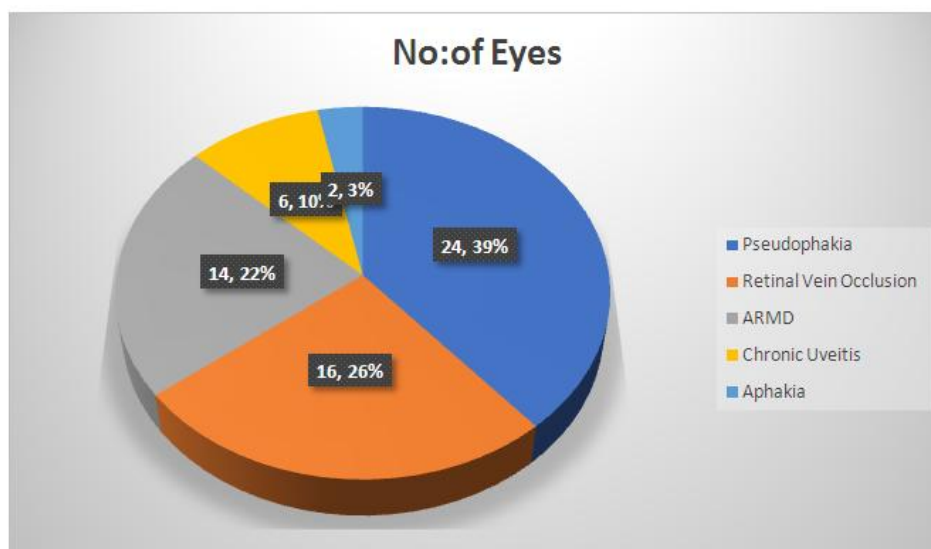
In this study, incidence of cystoid macular edema was more in right eye (44%). In 12 cases (24%) there was a bilateral presentation.

CAUSES OF CYSTOID MACULAR EDEMA

Table 4

Cause	No. of Eyes	Percentage
Pseudophakic Macular Edema	24	38.7%
Retinal Vein Occlusion with CME	16	25.8%
ARMD	14	22.5%
Chronic Uveitis	6	9.6%
Aphakia	2	3.2%

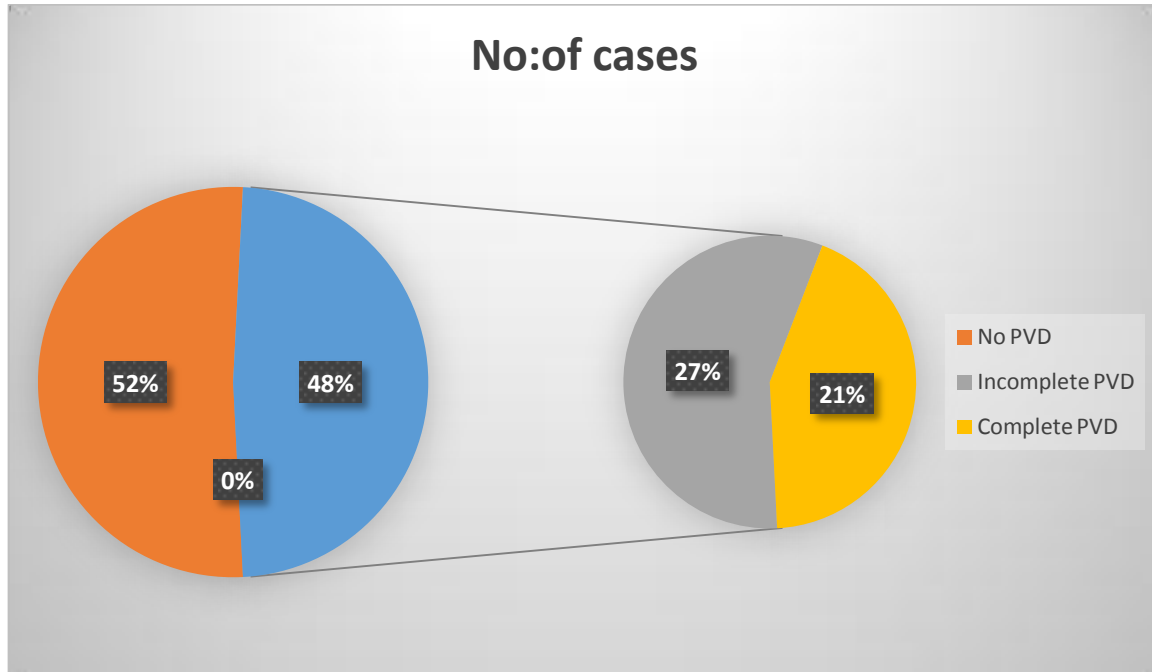
Chart 4



**Associations with PVD
Table 5**

Association of PVD	No:of Eyes	Percentage
Incomplete PVD	17	27.4%
Complete PVD	13	20.9%
No PVD	32	51.7%

Chart 5



IV. Discussion

AGE DISTRIBUTION

In this study of 50 patients, majority of the patients (58%) belong to 5th and 6th decades. This may be due to the fact that most of cataract surgeries take place in this age group and prevalence of systemic diseases like HT is more common in this age group. We had 13 cases below 50 years accounting for 26% of patients. Previous studies showed similar involvement. (Daniel M.Taylor et al.)⁽⁴⁾

SEX DISTRIBUTION

The study revealed a slight Male preponderance with a male to female ratio of 1.94:1.

LATERALITY

In this study, RE (44%) was more commonly involved than LE(32%), bilateral(24%) presentation being uncommon relatively.

ETIOLOGY

Pseudophakic Macular Edema (38.7%) being the highest, last being Aphakia (3.2%).

CME IN RELATION TO SURGICAL COMPLICATIONS

About 11 cases had posterior capsular rent and 3 cases had iritis in this study. A posterior capsular rent leads to loss of barrier effect, thus predisposing to develop CME. The increased association of CME with post op iritis has been well documented by Marvin L.Sears (Surv.Ophthalmol 28(suppl) :525-534,1984)⁶ who states occurrence of CME after ocular trauma (surgery) is related to synthesis and release of endogenous mediators like prostaglandins. About 30% (6 cases) developed CME despite an uncomplicated surgery and uneventful post-operative period. This may be because of ocular trauma caused by surgery leading to synthesis of inflammatory mediators that lead diffuse posteriorly and also because of non-functioning of Bito's⁷ pump in ciliary epithelium for 3 weeks post surgery.

CME IN RELATION TO RETINAL VEIN OCCLUSION

Out of 62 Eyes, 5 eyes(8%) had Branched Retinal Vein occlusions, 2 eyes (3.2%) had temporal Hemi retinal vein occlusion and 9 eyes (14.5%) had Central Retinal Vein Occlusion Retinal vein obstructions represent another common retinal vascular cause of CME. In patients with central retinal vein occlusion or a tributary branch occlusion involving the macula, CME is a major cause of visual loss. This edema, if severe or chronic (>8 months), causes permanent diminution of vision secondary to disruption of the microscopic

intraretinal connections and to the intracellular damage suffered by the visual elements (Coscas and Gaudric 1984)⁵. Persistent CME may be associated with vitreomacular attachment or hyperlipidemia and cardiovascular history.

ASSOCIATION OF PVD

Out of 62 eyes, 17eyes (27.4%) that had incomplete PVD and 13 eyes(20.9%) with complete PVD on OCT. A total of 30 eyes accounting for 48.3% had either complete or incomplete PVD. Remaining 32 eyes(51.7%) did not have PVD.Following cataract extraction, loss of hyaluronic acid from vitreous gel occurs, which accelerates vitreous degeneration. Combined with forward movement of vitreous body as a result of removal of crystalline lens, the loss of hyaluronic acid precipitates vitreous detachment³. Firm attachments of vitreous cortex to retina are usually present at macula and optic disc. These normal vitreoretinal adhesions become focal sites of vitreoretinal traction when a PVD occurs predisposing to CME⁷. A study by Schepens CL et al.(*Ophthalmology* 96 (10) : 1511-6,1989 Oct.)⁸ gives a 42.1% incidence of PVD in patients with postoperative CME.

V. Conclusion

Cystoid macular edema presented mostly in the 5th and 6th decade with slight male preponderance. This study describes pseudophakic macular edema as the leading Etiology with significant association of CME was found with posterior capsular rent. About 30% of CME developed in uneventful intra and post-operative period. A total of 30 eyes accounting for 48.3% had either complete or incomplete PVD. Remaining 32 eyes(51.7%) did not have PVD.

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