Superior Por Reserves	Original Research Paper	Ophthalmology
	BILATERAL MACULOPATHY SECONDARY 1	TO LIGHTNING: A CASE REPORT
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ABSTRACT PURPOSE secondary	: Ocular injuries secondary to lightening are infrequer to lightning.	nt. We report a case of bilateral maculopathy
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**CASE REPORT:** The patient presented with 2 months history of decrease in vision in both eyes after lightning strike. Anterior segment examination was normal. On fundus examination retinal pigment changes was noted in both eyes. Optical coherence tomography revealed macular hole with intraretinal cystic spaces and subfoveal cyst in the right and left eye respectively.

## **KEYWORDS** : Intraretinalcyst, Lightning, Maculopathy, Optical coherence tomography,

### INTRODUCTION

Lightning can cause numbers of ocular complications. Lightning maculopathy results in acute visual loss and macular changes. The most common ophthalmic structure to be involved during lightning strike is cornea [1]. Other injuries involving anterior segment are thermal keratopathy, uveitis, hyphema, anterior and posterior subcapsular cataract and dislocated lens [2]. The posterior segment is also affected during lightning which may include vitreous hemorrhage, retinal edema, retinal hemorrhage, retinal detachment, cystoid macular edema, chorioretinal rupture, lightning maculopathy, macular hole, central retinal vein occlusion and central retinal artery occlusion [3, 4]. Neurological injuries associated with lightning include thermal papillitis, optic neuropathy, loss of pupillary reflex, anisocoria, Horner's syndrome, multiple cranial nerve palsies and nystagmus [3, 4]. Visual recovery often occurs over time, even with severe maculopathy.

### **CASE REPORT**

A 37 year old man was struck by lightning resulting in loss of consciousness when he was sleeping in the terrace of his house. Two months later he presented with complaints of blurring of vision in both eyes. The best corrected visual acuity was 20/60 and 20/40 in the right and left eye respectively. Extraocular motility was full in all cardinal gazes. The eyelids, adnexa, anterior segment and intraocular pressure were normal. Fundus examination of both eyes revealed retinal pigment alterations with cystic lesion resembling macular hole. (Fig 1a and 1b). The Watzke – Allen sign was positive in the right eye. Optical coherence tomography of the right eye demonstrated macular hole with intraretinal cystic spaces and subfoveal cyst in the left eye. (Fig 2a and 2b). Intraocular pressure of both eyes was within reference limit. We advised our patient to follow up regularly to evaluate fundus and optical tomography coherence changes and he need to go under surgery if needed. He didn't come for follow up. We assume that there might be spontaneous closure of macular hole.



Fig 1a: Right fundus

Fig 1b : Left fundus

Fig 1a and 1b: Fundus showing RPE changes with cystic lesion resembling macular hole



Fig 2a: Right eye

Fig 2b: Left eye

# Fig 2a and 2b: OCT images of macula showing macular hole with intraretinal cystic spaces and subfoveal cyst in right eye and left eye respectively.

### DISCUSSION:

Lightning-induced maculopathy manifests as cystoid macular edema and macular hole [3].

It is mainly caused by the heat generated at the level of RPE due to resistance by melanin [6]. Lee et al. [4] reported four routes by which lightning reaches its victims and causes injuries:

- 1. Direct strike: when the major current flows directly through the victim and is facilitated by metal objects.
- 2. Splash: where lightning strikes an object first and then arcs through the path of least resistance.
- 3. Contact: when lightning strikes an object the victim is in contact with such as being electrocuted while talking over the phone or in the bathtub by current flowing through wires or pipes.
- 4. Ground current: the bolt strikes the ground and travels along the surface towards the victim.

Our patient probably sustained the injury by the third or fourth mechanism as mentioned. Because of the high content of melanin granules the macula is very sensitive to thermal damage. It could damage outer retina and RPE by electrolysis. Lightning injury cause localized inflammation which can lead to retinal pigment epithelial dysfunction or development of retinal vascular incompetence resulting in macular edema [3]. Later this macular edema may be replaced by'cyst,''macular hole'or'solar maculopathy.' Handa et al [3] state that lacks of posterior vitreous detachment and operculum support the diagnosis of lightning maculopathy. Spontaneous closure of macular hole after lightning has been reported by Lee et al. [4].

Optical coherence tomography (OCT) is a diagnostic tool to differentiate between macular cystic changes and full-thickness macular hole. It has been reported that maculopathy with cystic change may resolve spontaneously but in some case surgical intervention is needed for full-thickness macular hole [7]. Visual prognosis in patients with lightning-induced ocular injury will depend upon the extent of involvement of ocular structures and in the absence of anterior segment manifestation, irreversible retinal damage as well as optic nerve damage are the major determinant factors. We advised our patient to follow up regularly to evaluate fundus and optical tomography coherence changes. He didn't come for follow up. We assume that there might be spontaneous closure of macular hole.

### **CONCLUSION:**

Maculopathy due to lightning is an uncommon cause of ocular injury. Optical coherence tomography is a diagnostic tool to evaluate the macular damages and to implement early treatment modalities on time for better visual outcome. Visual prognosis in patients with lightning-induced ocular injury depends on the extent of irreversible retinal and macular damage. Therefore, longterm follow-up of is recommended.

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