



## CASE REPORT

### Retinal Toxicity from Ectoparasiticide Exposure or Coincidental?

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#### Abstract

**Case Report:** A 42 Year old male presented with complaints of sudden painless diminution of vision in RE for 3days, after fall of ectoparasiticide (DELTAMETHRIN1.25%) in Right Eye. Uncorrected visual acuity in Right eye: counting fingers at 1/2metre, Left Eye: 6/6. Anterior segment evaluation showed Right and Left eye within normal limits. Pupils were 3mm round, regular, reactive to light in OU. Dilated Fundus Examination using indirect ophthalmoscopy showed Right Eye C:D:0.5, A:V 2:3 with subretinal fluid accumulation in macula and Left Eye normal fundus picture. A diagnosis of RE Central serous Chorioretinopathy (CSCR) was made using Optical Coherence Tomography. **Discussion:** With an incidence rate of 9.9 per 100,000, or roughly six times higher than that of women, CSCR mostly affects men. Acute or subacute central vision loss or distortion is the most prevalent symptom, and it typically affects men between the ages of 20 and 50. With regard to illnesses like CSCR, this case study aims to provide clinicians with more insight into the diagnosis, treatment, and management of pesticide-induced ocular damage. **Conclusion:** This is rare case of retinal toxicity following exposure to Deltamethrin. For an accurate diagnosis and management of CSCR, it is imperative to comprehend its risk factors, particularly the exposure to pesticides. Emphasizing eye protection and preventative health measures will help us safeguard our vision from environmental risks such as pesticide exposure.

**Keywords:** Pesticide, Deltamethrin, Central serous, Chorioretinopathy

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## Introduction

The health risks associated with pesticide exposure are well-documented environmental health concerns. Occupational exposures to pesticides primarily occur within the agricultural sector, affecting pesticide applicators, farmers, and other agricultural workers. The toxic effects on the eyes from pesticide exposure can occur through inhalation, ingestion, dermal contact, and direct ocular exposure.

When unprotected eyes are exposed to pesticides, the chemicals can be absorbed into ocular tissues, leading to potential ocular toxicity. Deltamethrin, a synthetic pyrethroid, is a pesticide developed as a safer alternative to the more harmful and persistent organophosphate and organochlorine pesticides. Deltamethrin is widely used as an insecticide on crops, a pesticide for pets and livestock, in home pest control, and for malaria vector control [1].

Occupational exposure to Deltamethrin and other pesticides is frequently caused by poor protective measures, such as a lack of personal protective equipment, the use of excessive quantities, spraying against the wind, and

unintentional intake. Pesticide exposure has been shown to cause pathogenic consequences on the conjunctiva, cornea, lens, retina, and optic nerve, among other ocular components. Signs of macular and retinal degeneration among pesticide workers have been documented in a number of case series.

With an emphasis on deltamethrin and its harmful effects on the eye, this case study seeks to clarify the ocular toxicity linked to pesticide exposure.

## Case Presentation

A 42 Year old male presented with complaints of sudden painless diminution of vision in Right Eye for 3 days, after fall of ectoparasiticide (DELTAMETHRIN 1.25%) in Right Eye. Uncorrected visual acuity in Right Eye: counting fingers at 1/2metre, Left Eye: 6/6. Anterior segment evaluation showed Right Eye and Left Eye within normal limits. Pupils were 3mm Round, regular reactive to light in OU. Both eyes fundus were evaluated using indirect ophthalmoscopy. Both eyes Optical coherence tomography was done (Figures 1 to 4).

OD



Figure 1. Fundus photo of RE showing, C:D 0.5 with subretinal Fluid accumulation in macula

OS

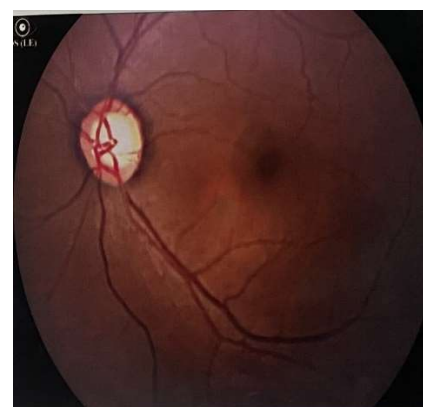


Figure 2. Fundus photo of LE showing, C:D O.7 Dull FR.

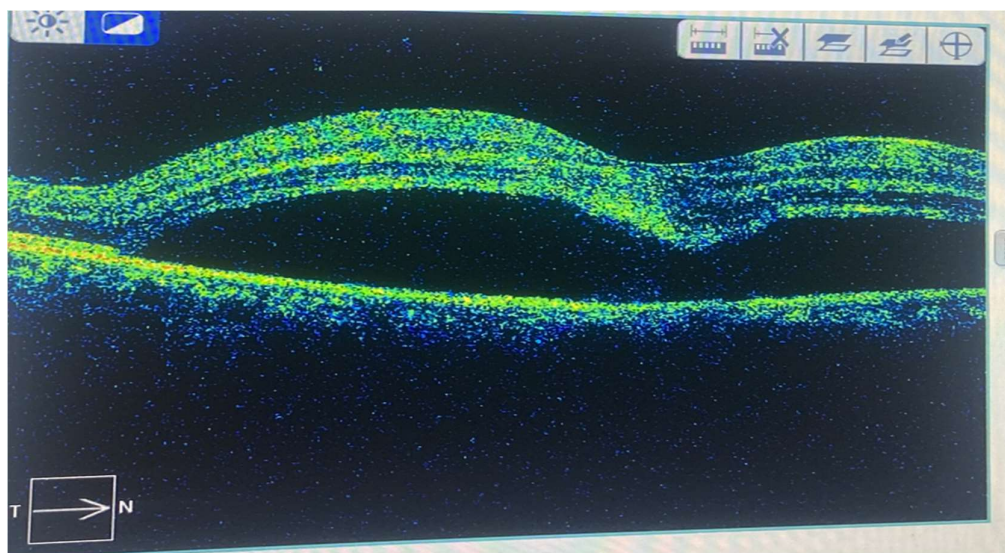


Figure 3. OCT picture of RE: Showing Serous sub retinal fluid accumulation in the Macular area

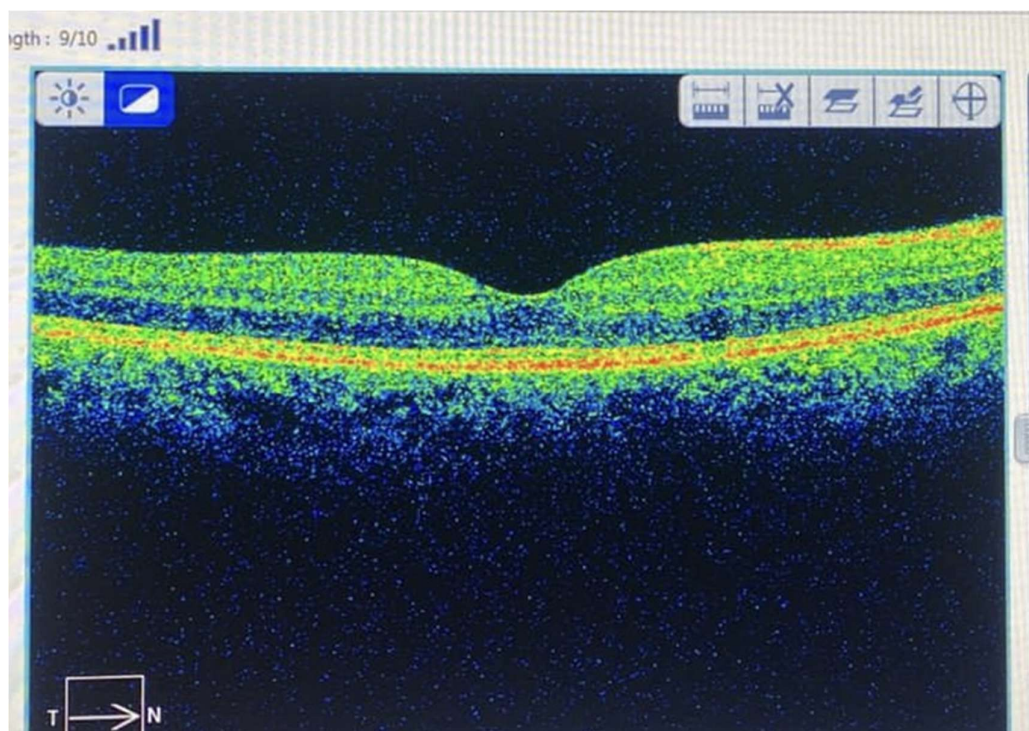


Figure 4. OCT Picture of LE showing: Normal Macula

A diagnosis of RE Central serous Chorioretinopathy was made using OCT.

- Following this, Topical Nepafenac 0.1% BD was administered and advised for follow up after 1 month
- During follow up Right eye visual acuity improved to 6/60 with resolution of sub retinal fluid seen with Optical coherence tomography.
- Patient has been advised for regular monthly followup.

### **Discussion**

Central serous chorioretinopathy (CSCR) is the fourth most frequent kind of retinopathy, after age-related macular degeneration, diabetic retinopathy, and branch retinal vein occlusion.

CSCR primarily affects men, with an incidence rate of 9.9 per 100,000, which is about six times higher than that of women. Males between the ages of 20 and 50 are most commonly affected, with symptoms usually presenting as acute or subacute central vision loss or distortion. Patients often describe symptoms including diminished contrast sensitivity and color saturation, central scotoma, hyperopic (most common) or myopic shift, micropsia, and metamorphopsia.

Although the precise pathophysiologic mechanisms responsible for CSCR are yet unknown, it is believed that hyper-permeable choroidal capillaries are the cause of the condition. This increased permeability, along with retinal pigment epithelium malfunction, causes a severe detachment of the neurosensory retina. Several risk factors have been related with CSCR, including type A personality, use of steroids, pregnancy, antibiotics, alcohol, Uncontrolled high blood pressure, Obstructive sleep apnea.

Recurrence of CSCR occurs in roughly 31% of patients, however some texts indicate recurrence rates of up to 50% [2].

Research points to a possible link between pesticide exposure and an increased risk of retinal degeneration. The Agricultural Health Study, a major prospective study including over 50,000 farmer pesticide applicators, discovered a link between retinal degeneration and fungicide and other pesticide exposure [3].

Furthermore, retinopathy associated with pesticide exposure has been observed in agricultural labourers and the spouses of pesticide-using farmers [3].

Pesticides from chemical classes including organophosphate and pyrethroid insecticides and the bipyridyl herbicide paraquat increase the oxidative stress in the retina [4]. However, the contemporary literature on the hazards of ocular damage from pesticide exposure is minimal.

This case report seeks to help clinicians diagnose and manage ocular toxicity caused by pesticide exposure, as well as get a better knowledge of its implications in disorders such as CSCR.

### **Conclusion**

CSCR is a major cause of vision impairment, especially in middle-aged men. Understanding its risk factors, especially pesticide exposure, is critical for accurate diagnosis and management. Pesticide-related ocular toxicity management includes identifying high-risk populations with ocular exposure to pesticides, monitoring visual symptoms, and developing improved and rapid techniques of detecting eye diseases. In order to reduce the possibility of ocular toxicity caused by pesticides, it is critical to progress research, improve diagnostic methods, and enforce effective public

health initiatives. We can protect our vision from environmental threats like pesticide exposure by emphasizing eye protection and preventative health practices.

#### **Conflicts of interest**

The authors declares that they do not have conflict of interest.

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No funding was received for conducting this study.

#### **Informed Consent**

Informed consent was obtained from the participant.

#### **References**

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