

# Phenothiazine Deposits in Corneo and Lens

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## Summary

Phenothiazines have been associated with various ocular adverse effects, in particular cataract and corneal deposits. Several effects are vision threatening. Awareness of these effects, in particular by Psychiatrists and Ophthalmologist, is essential for prompt diagnosis and appropriate treatment. We report two patients presented to us with corneal deposits and lenticular opacities following long term use of Phenothiazines.

**Key Words:** Phenothiazines, Corneal deposits, Cataract

## Introduction

Phenothiazine drugs have been associated with various ocular adverse effects. These include lenticular opacities, corneal deposits, corneal oedema, blepharoconjunctivitis, retinopathy, ocular movement disorders and erythema multiforme. Several adverse effects are vision-threatening, and patients often failed to describe their symptoms properly. A more precise understanding of these conditions is essential for prompt diagnosis and appropriate treatment.

## Case Report 1

AA, a 51 year-old man with history of Schizophrenia on treatment for the past 20 years, came to us with the complaint of painless progressive blurring of vision bilaterally for the past one year. There was no history of ocular trauma. There was also no history suggestive of recurrent corneal erosions. He has been on im Fluphenazine 37.5mg weekly, Haloperidol 10 mg om., and Benzhexol 2mg om. for the past 20 years.

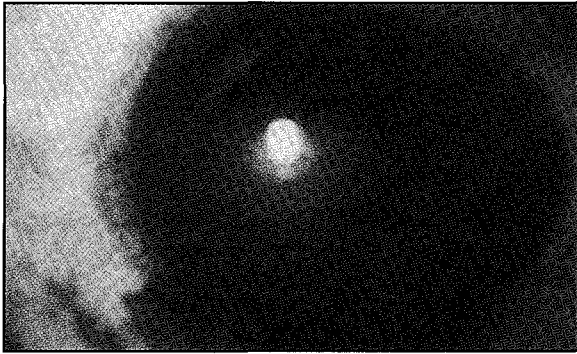
Ocular examination revealed visual acuity of 6/24 (unaided) in the right eye and 6/18 (unaided) in the left eye. There were multiple fine punctate grayish-white opacities throughout the

corneal stroma in the interpalpebral region bilaterally (Figure 1). Yellow-brown dust-like deposits were also noted on the endothelial surfaces bilaterally. Otherwise, there were neither epithelial defects nor evidence of inflammation. Yellow-brown stellate shape anterior subcapsular cataracts were present bilaterally (Figure 2). The anterior chambers were quiet. The intraocular pressure measurements were 11mmHg bilaterally. The fundoscopic findings were normal, except for the fact that the view was hazy.

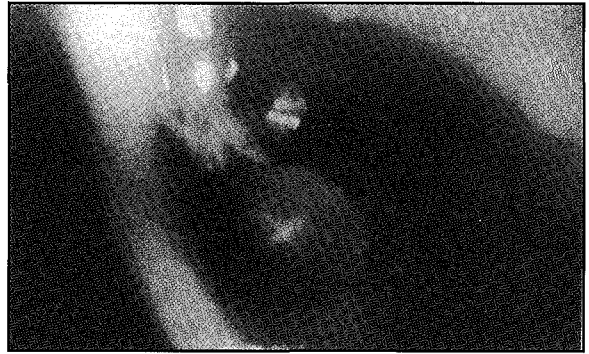
## Case Report 2

WSL, a 37 year-old lady with history of Schizophrenia since the age 17 presented to us with the complaint of blurring of vision for the past 2 years. She has been on intra-muscular Fluphenazine 25mg monthly, Thioridazine 200mg tds, and Benzhexol 2mg daily since then. Otherwise, there were no significant medical and ophthalmic histories.

Examination revealed best corrected visual acuity of 6/9 bilaterally. There were multiple fine brown deposits on the corneas in the interpalpebral region bilaterally. Brown lenticular deposits were found on the anterior capsules and anterior subcapsular areas, in a cruciate manner, bilaterally.



**Fig. 1 : Corneal opacities at the interpalpebral exposed cornea region**



**Fig. 2 : Yellow-brown stellate-shaped anterior subcapsular lens deposits.**

Otherwise, no evidence of inflammation was found. The intraocular pressures were normal bilaterally. Fundoscopic examinations were unremarkable.

### Discussion

Antipsychotic medications have been associated with numerous ocular effects. Several adverse effects are vision threatening, but however, patients often failed to describe their symptoms properly. Among the anti-psychotics, Phenothiazines is the commonest used medication. Greiner and Berry first described Phenothiazines ocular toxicity affecting the cornea, conjunctiva and lens in 1964<sup>1</sup>. Since then, numerous authors have described similar changes in patients on long term Phenothiazines therapy, mostly on chlorpromazine<sup>2</sup>. The reported ocular adverse effects include lenticular opacities, corneal deposits, corneal oedema, pigmentary retinopathy (Thioridazine) and ocular movement disorders<sup>3</sup>.

Asymptomatic corneal deposits are found in the posterior stroma, descemet's membrane, and endothelium and are described as yellow-brown dustlike granules occurring only in

the exposed cornea of the interpalpebral fissures<sup>4</sup>. The interpalpebral conjunctiva and the lids may also develop brown discoloration. Yellow stellate-shaped anterior subcapsular lens deposits are typically seen before the corneal changes. In a series by Dellong et al, lenticular changes were noted in about half of the patients with cumulative doses of 1,000 g. at higher doses, about 18% showed corneal and conjunctival changes<sup>5</sup>. It is hypothesized that chlorpromazine denatures protein when exposed to light, then the protein, in turn, becomes opacified and is deposited in the lens, corneal stroma, conjunctiva, and skin<sup>5</sup>. The location in the anterior lens and deep cornea suggests that these compounds (or breakdown products) enter tissue through the aqueous.

A more precise understanding of these conditions is essential for prompt diagnosis and appropriate treatment. There have been reports of regression of corneal deposits following cessation of treatment with Chlorpromazine over a period of many years (seven to thirteen years). Awareness of these effects, in particular by Psychiatrists and Ophthalmologist, is essential for early diagnosis and appropriate counseling as well as treatment.

**References**

1. Greiner AC, Berry K: Skin pigmentation and cornea and lens opacities with prolonged Chlorpromazine therapy, *Can Med Assoc J* 1964; 90: 663-65.
2. Ngen CC, Singh P: Long-Term phenothiazine administration and the eye in 100 Malaysians, *British Journal of Psychiatry* 1988; 152: 278-80.
3. DeLong SL, Poley BJ, McFarlane JR: Ocular changes associated with long-term chlorpromazine therapy, *Arch Ophthalmol* 1965; 73: 611-17.
4. Siddal JR: Ocular toxic findings with prolonged and high dosage of Chlorpromazine intake, *Arch Ophthalmol* 1964; 74: 460-64.
5. Howard RO et al: Experimental chlorpromazine cataracts, *Invest Ophthalmol* 1969; 8: 413-21.