Phenothiazine toxicity

**Chlorpromazine, Thioridazine**

**DESCRIPTION**
Phenothiazines are used for multiple indications, including psychiatric conditions (for example, schizophrenia, psychosis and depression), headache, nausea and vomiting. Pharmacological properties vary between individual agents, but include competitive blockade of dopamine receptors and a variable degree of anticholinergic activity.

Patients maintained on phenothiazines for many years carry a high risk of developing ocular side effects – almost 100 per cent in one reported case series. The most frequent manifestation is blurred vision. This is thought to result mainly from anticholinergic effects including reduced accommodation. Increased intraocular pressure may also develop, with risk of glaucoma.

Among the more commonly used phenothiazines, prolonged chlorpromazine use is associated with pigment deposition in the eyelids, cornea and lens. Pigmented retinopathy occurs less often; anterior and posterior subcapsular cataract have also been described. Retinal pigmentary changes are more often observed with thioridazine use. This effect is dose-related, and usually develops after several years of use. Effects can also occur within months with high dose therapy.

**SYMPTOMS**
Common systemic adverse reactions to phenothiazines include postural hypotension and sedation. Anticholinergic symptoms include dry mouth, constipation, urinary hesitancy and blurred vision. Extrapyramidal effects can develop acutely or after chronic use, and include acute dystonic reactions, akathisia, Parkinsonism and tardive dyskinesia.

In addition, individual phenothiazines have unique adverse effect profiles. Chlorpromazine causes photosensitivity and a predisposition to sunburn, while thioridazine carries the risk of cardiac arrhythmias and sudden death. Pigment deposition may cause poor dark adaptation or altered colour vision.

**SIGNS**
- The typical ocular signs resulting from chlorpromazine use include abnormal eyelid pigmentation; fine, light-brown granules on the anterior lens surface; and corneal endothelial deposits
- With thioridazine toxicity, fine or coarse clumps of retinal pigment are present between the posterior pole and the equator. Patchy or generalised retinal depigmentation or atrophy can develop in advanced cases
- With advanced toxicity, retinal atrophy may produce visual field defects.

**PREVALENCE**
Common with prolonged use; decreasing in frequency with the introduction of newer antipsychotic agents.

**SIGNIFICANCE**
May cause visual impairment. Alternative antipsychotic therapy may be required.

**DIFFERENTIAL DIAGNOSIS**
Retinitis pigmentosa, Chorioretinitis (for example, Syphilis).

**SEE ALSO**
Cataract, Posterior uveitis.

**MANAGEMENT**

**Blood tests**
In some cases when the cause of the ocular presentation is unclear, diagnostic tests may be performed (for example, screening tests for syphilis infection).

**Advice**
As with most medications, identification and maintenance of the lowest possible dose compatible with symptom control minimises the incidence of complications. Photosensitivity and lens opacification can be minimised by avoidance of bright light, and with sunglasses that block UV wavelengths up to 400nm. Phenothiazines should be discontinued if retinopathy or visual impairment is detected; vision usually stabilises or improves thereafter.

**Review**
Patients taking phenothiazines should receive ocular review at two-year intervals.

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The full series of these articles will be available in the book _Posterior Eye Disease and Glaucoma A-Z_ by Bruce AS, O’Day J, McKay D and Swann P. £39.99. For further information click on the Bookstore at [opticianonline.net](http://opticianonline.net).

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