


Sodium valproate-induced cataract

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DESCRIPTION

We report a rare case of bilateral sodium valproate-induced cataract in a 21-year-old man who was being treated with oral sodium valproate 500 mg/day since the last 3 years for seizure disorder. The best-corrected distance visual acuity was 20/200 in both eyes. Anterior segment examination revealed central subcapsular breadcrumb-like posterior subcapsular opacities with multiple radiating spoke-like cortical opacities in the lens ([figure 1](#)) of both eyes. It was treated with phacoemulsification with foldable intraocular lens in the right eye first and then in left eye. After 1 month of surgery, vision in both eyes was improved to 20/20 with normal intraocular pressure.

Recently, epidemiological associations between epilepsy and increased cataract prevalence were found comparable to cataract links with diabetes and smoking. Shared expression and regulation of GluA2 in lens and brain may be a common factor contributing to increased cataract prevalence observed in patients with epilepsy.¹

Similarly, the drugs used to treat epilepsy also show the connection with increased cataract formation. Sodium valproate activates chronic unfolded protein response to suppress the nuclear

factor-erythroid-2-related factor 2-dependent stress/antioxidant protection by epigenetic modification of the *Kelch-like ECH-associated protein 1 (Keap1)* gene and by proteasomal degradation, which leads to lens oxidation and cataract formation.²

Learning points

- ▶ Valproic acid (VPA) activates endoplasmic reticulum (ER) stress-mediated unfolded protein response (UPR) in human lens epithelial cells.
- ▶ VPA suppresses nuclear factor-erythroid-2-related factor 2-dependent antioxidant protection in human lens epithelial cells.
- ▶ Various epidemiological studies indicate the associations between cataract prevalence and epilepsy are equivalent to the association of cataract with ageing, diabetes, arterial hypertension and smoking.
- ▶ The other ocular side effects of sodium valproate are diplopia, nystagmus, oscillopsia and visual hallucinations.

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REFERENCES

- 1 Farooq M, Kaswala RH, Kleiman NJ, *et al.* GluA2 AMPA glutamate receptor subunit exhibits codon 607 Q/R RNA editing in the lens. *Biochem Biophys Res Commun* 2012;418:273–7.
- 2 Shinohara T, Periyasamy P, Bidasee K, *et al.* Epilepsy cataract: valproic acid suppresses the Nrf2 dependent Stress/Antioxidant protection. *Investigative Ophthalmology & Visual Science* 2013;54:5948.

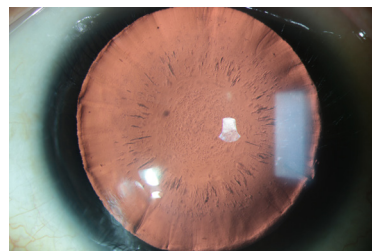


Figure 1 Slit-lamp image under retro illumination showing central subcapsular breadcrumb-like posterior subcapsular opacities with multiple radiating spoke-like cortical opacities in the lens.



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