CASE REPORT

Longitudinal follow-up of quiescent lens injury secondary to intravitreal antivascular endothelial growth factor injection

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A longitudinal follow-up of quiescent lens injury caused by intravitreal antivascular endothelial growth factor (VEGF) injection was reported. A 55-year-old man complained of unilateral diplopia in the right eye soon after the fourth intravitreal anti-VEGF injection for macular edema secondary to central retinal vein occlusion elsewhere. At presentation, ophthalmic examination revealed an evident track-like posterior capsule damage of the lens accompanied by clustered lens epithelial cell proliferation along each side of the posterior capsule break, yet without subcapsular cataract formation. At the 3-month follow-up, slitlamp examination showed a bit denser track-like opacification of the posterior lenticular capsule that was surrounded by mild disc-like posterior capsular opacification. Over another 3 months of follow-up, the posterior capsule damage kept stable. Although rare, quiescent lens injury might occur after intravitreal anti-VEGF injection, attention should also be paid to the lens besides fundus conditions when patients complained of visual disturbance soon after uneventful intravitreal injections.

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CASE REPORT

Intravitreal injection of antivascular endothelial growth factor (VEGF) agents has been frequently performed as a beneficial treatment for exudative age-related macular degeneration, myopic or idiopathic choroidal neovascularization, and macular edema secondary to retinal vein occlusion, diabetic retinopathy, or uveitis. It is reported that the incidence of traumatic cataract after intravitreal injection of anti-VEGF agents is up to 0.07%. Compared with rapidly progressed traumatic cataract or accelerated cataract, quiescent lens injury caused by intravitreal injection is easily neglected and might more possibly lead to intraoperative complications such as PCR and posterior dislocation of lens fragments during subsequent cataract surgery.

To our knowledge, there are few cases of quiescent lens injury secondary to intravitreal injection reported in the literature. We herein report 6-month follow-up of quiescent lens injury caused by intravitreal anti-VEGF injection.

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right eye (Figure 1, F). Iatrogenic quiescent lens injury in the right eye was diagnosed. Considering the good visual acuity and no traumatic cataract formation in the right eye, periodic follow-up with no medical or surgical therapy for lens injury was advised and performed.

At the 3-month follow-up, his visual acuity was still 0.8 in the right eye; however, slitlamp examination revealed a bit denser track-like opacification of the posterior lenticular capsule that was surrounded by mild disc-like posterior capsular opacification secondary to lens epithelial cell proliferation; direct ophthalmoscopy showed recurrence of CRVO and secondary macular edema in the right eye (Figure 2, A to 2, C). OCT confirmed cystoid macular edema in the right eye (Figure 2, D).

During the 6-month follow-up, 2 times monthly intravitreal conbercept injections combined with panretinal photocoagulation and subsequent 1 intravitreal injection of sustained dexamethasone implant (OzurDex) were uneventfully performed 2 times a month in the right eye in the third, fourth, and fifth month, respectively, for periodic recurrence of CRVO and secondary macular edema; all procedures were performed after detailed discussion with the patient was done and informed consent was signed.

At the 6-month follow-up visit, his visual acuity was still 0.8, the posterior capsule damage kept stable, and there was no recurrence of CRVO and macular edema in the right eye by direct ophthalmoscopy and OCT (Figure 2, E to 2, G).

DISCUSSION
With the popularity of intravitreal anti-VEGF therapy in neovascular ocular diseases and macular edema, the long-term safety of intravitreal injections got more attention, especially when several studies reported that eyes with a history of previous intravitreal injections showed an increased risk of PCR during subsequent cataract surgery. Inadvertent posterior capsule damage to the lens during intravitreal injections was postulated to be a main cause of the increase in PCR incidence.5–7 Posterior lenticular capsule damage during intravitreal injections usually caused rapidly progressed traumatic cataract or accelerated cataract, yet might occasionally lead to quiescent lens injury that was easily neglected and more possibly lead to intraoperative complications such as PCR and posterior dislocation of lens fragments during subsequent cataract surgery.2–8,10,12–14

Although it is reported that the incidence of traumatic cataract after intravitreal injections of anti-VEGF agents...
was up to 0.07%, the exact incidence of lens injury caused by intravitreal injections might be much higher because many quiescent posterior capsule injuries of the lens secondary to intravitreal injections were only found during subsequent cataract surgery.\textsuperscript{2–10}

The reason of the underestimation of lens injury secondary to intravitreal anti-VEGF injections might exist as follows: first, the overlap of the patients' complaints. It is well known that the main complaint of patients with chorioretinal diseases needing intravitreal anti-VEGF therapy was blurred vision or metamorphopsia, which was also the chief symptom of traumatic cataract or lens injury secondary to intravitreal injections. The overlap of the main complaints of the above-mentioned two conditions might mislead both patients and physicians to attribute visual symptoms to the original diseases, hence missed the best opportunity for early detection of iatrogenic lens injury. Second, the overlap of the causes of lens opacity. Many patients had preexisted cataract due to age-related, diabetic, or other causes before intravitreal injections; therefore, mild lens injury, especially quiescent posterior capsule damage of the lens was easily neglected without careful slitlamp examination during follow-up.

It was well known that inadvertent posterior lenticular capsule tear caused by inappropriate intravitreal injections could lead to rapidly progressed subcapsular cortex opacification and traumatic cataract formation; however, the pathogenesis of quiescent lens injury without evident traumatic cataract was still not clear because only several cases were reported in the literature and the lack of clinical image data on posterior capsule condition soon after intravitreal injections.\textsuperscript{10,13,14} One possible explanation was that the injury to the posterior capsule caused by a 30-gauge needle insertion was slight and might be immediately closed by the adjacent non-liquified anterior vitreous cortex, then subsequently repaired by the migration and proliferation of lens epithelial cells from the equator of the lens, which was similar to the pathogenesis of posterior capsular opacification after extracapsular cataract surgery. Our case and previous cases reported in the literature supported this explanation.\textsuperscript{10,13,14}

Our case in this study had a definite complaint of unilateral diplopia soon after an intravitreal injection in the same eye, although his visual acuity is 0.8 and no macular edema or retinal detachment found under ophthalmoscopy. Hence, the only explanation of unilateral diplopia existed in the track-like posterior lenticular capsule damage, which was consistent with the trail of needle insertion. Therefore, when patients complained of visual disturbance soon after intravitreal injections for chorioretinal diseases, attention should also be paid to the lens to ensure the presentation of iatrogenic lens injury besides fundus conditions.

Figure 2. Iatrogenic quiescent lens injury during follow-up. At 3 months' follow-up, diffuse (A) and retrospective (B) illumination revealed a bit denser track-like opacification of the posterior lenticular capsule that was surrounded by mild disc-like posterior capsular opacification secondary to lens epithelial cell proliferation. C: Colour fundus photograph showed recurrence of CRVO and secondary CME. D: OCT confirmed CME. At 6 months' follow-up, E: retrospective illumination revealed the posterior capsule damage kept stable. F: Colour fundus photograph showed no recurrence of CRVO and macular edema. G: OCT confirmed no CME recurrence. Figure 2A was magnified posterior capsule lesion of the lens (CME = cystoid macular edema; CRVO = central retinal vein occlusion; OCT = optical coherence tomography).
WHAT WAS KNOWN
- Inadvertent lens injury during intravitreal injections could lead to rapidly progressed traumatic cataract or an increased risk of posterior capsule rupture during subsequent cataract surgery.
- Longitudinal follow-up of quiescent lens injury secondary to intravitreal injections, to our knowledge, has not been reported in the literature.

WHAT THIS PAPER ADDS
- Quiescent lens injury is a rare complication of intravitreal injections and might keep stable for a relatively long time.
- Inadvertent lens injury should be excluded when patients complained of visual disturbance soon after intravitreal injections for chorioretinal diseases.

REFERENCES

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