Rapid visual recovery after inadvertent embolization of retinal arterioles with triamcinolone acetonide

ABSTRACT

Objective
To describe a case of acute visual loss due to retinal arteriolar embolization caused by transeptal triamcinolone-acetonide injection, with rapid visual recovery following immediate intervention.

Methods
This is a case report.

Results
A 39-year-old female developed loss of vision (no light perception) after transeptal triamcinolone-acetonide injection. Examination revealed yellowish, particulate emboli within the retinal arterioles. Strategies to relieve the obstructed vessel (anterior-chamber paracentesis, intraocular-pressure-lowering medications, and ocular massage) were immediately performed. Full recovery of vision occurred within 24 hours.

Conclusion
Retinal vascular embolization should be suspected when there is loss of vision after corticosteroid injection. Immediate ocular decompression may lead to rapid improvement and favorable visual outcomes.

Keywords: Emboli, Ocular decompression, Retinal-artery occlusion, Transeptal injection, Triamcinolone acetonide
PERIOCULAR corticosteroid injection is an effective and safe method of treating posterior segment inflammation while avoiding side effects of systemic corticosteroid administration. Although acute complications from periocular corticosteroid injections are rare, severe and permanent visual loss resulting from particulate embolization of retinal and choroidal arterioles has been reported. The visual outcomes of these patients are generally poor. We describe a case of acute, severe visual loss due to retinal arteriolar embolization caused by transeptal triamcinolone-acetone (TA) injection with rapid visual recovery following immediate intervention.

CASE REPORT

A 39-year-old female with active multifocal choroiditis and panuveitis and best-corrected visual acuity (BCVA) of 20/40 received an inferior transeptal injection of TA (40 mg/1.0 ml) delivered using a half-inch gauge-27 needle. Immediately after injection, the patient developed severe left-cheek pain and severe loss of vision (no light perception). The intraocular pressure (IOP) was 18 mm Hg. Dilated retinal examination revealed multiple, yellowish, particulate emboli within the retinal arterioles (Figure 1). No particles were seen in the vitreous.

The patient was assessed to have TA embolization of the retinal arterioles. Anterior-chamber paracentesis was performed within 5 minutes of the injection to relieve the evolving vascular occlusion. Oral acetazolamide 500 mg, and one drop each of timolol maleate 0.5%, brimonidine tartrate 0.15% and bimatoprost 0.03% were administered. Aggressive ocular massage, composed of alternating cycles of compression and decompression, was performed for 10 minutes. Vision improved to hand motion while the IOP decreased to 4 mm Hg. Repeat fundus examination revealed preretinal hemorrhage temporal to the macula. The patient was sent home after 3 hours and instructed to continue IOP-lowering medications. She reported return of normal vision upon waking up the next day.

The patient was reexamined after three days. A lower eyelid hematoma at the injection site was observed. VA had returned to 20/40. The retinal appearance was unchanged with TA particles in the retinal arterioles and a small, extrafoveal preretinal blood clot. Fluorescein angiography (FA) confirmed the obstruction of end-
arterioles around the macula and proximal hyperfluorescent intra-arterial emboli (Figure 2A). Several segments of intra-arterial-blocked fluorescence were noted distally (Figure 2B). The preretinal hemorrhage resolved without sequelae and VA improved to 20/30 after 7 months.

DISCUSSION

Unilateral and bilateral visual loss due to retinochoroidal embolization, after periocular and intranasal corticosteroid injections, has been reported. Inadvertent intra-arterial corticosteroid injection and high injection pressure are possible mechanisms for vascular embolization after corticosteroid injection. Compared to TA, methylprednisolone (MP) injection may pose an increased risk for embolization due to the larger particle size of MP. Visual outcomes following arterial embolization vary from loss of vision to full visual recovery for both MP and TA. Previous reports suggested that initial visual acuity may predict visual outcomes with generally poor outcomes for initial postinjection VA of light perception or less. Among eyes with initially poor vision, visual improvement is slow and may take up to one year to fully recover.

In retinal arterial embolization, immediate intervention is aimed at relieving the obstruction to recover visual function, preventing permanent ischemic damage to ocular structures, and restoring retinal circulation. Strategies to relieve the obstructed vessel include:

1. anterior paracentesis to create a sudden decrease in IOP so the higher arterial pressure behind the obstruction can force the emboli into smaller tributaries;
2. IOP-lowering drugs to maintain this pressure gradient; and
3. ocular massage to break and dislodge the emboli.

Retinal vascular embolization should be suspected when there is loss of vision after corticosteroid injection. Dilated retinal examination and FA are necessary to establish the diagnosis. Immediate ocular decompression by anterior chamber paracentesis, oral and topical IOP-lowering medications, and ocular massage may lead to rapid improvement and favorable visual outcomes.

References