

Intravitreal steroid effective in treatment of macular oedema



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A RECENT study confirms that intravitreal triamcinolone can significantly improve visual acuity and reduce retinal signs in patients with macular oedema, although physicians need to be alert to its potential for serious side effects, according to Ramin Sarrafzadeh MD PhD, Williamsburg, Michigan, US.

In a series of 143 eyes of 129 patients with macular oedema who underwent treatment with 4.0 mg to 20 mg of intravitreal triamcinolone, mean visual acuity improved significantly from 20/128 to 20/62 ($P < 0.0001$) after a mean follow-up of 17 months (range: 6-30 months), Dr. Sarrafzadeh told the annual meeting of the Association for Research in Vision and Ophthalmology.

In addition, mean foveal thickness as measured by optical coherence tomography decreased significantly ($P = 0.0014$), from a baseline level of 460 microns to 227 microns, he said.

Some 62% of eyes in the study had diabetic macular oedema, of which 77% had undergone prior focal laser treatment. The remaining eyes had non-diabetic macular oedema, which was most commonly associated with macular pucker, Irvine-Gass syndrome, and macular pucker after retinal

detachment repair. One-third of the eyes underwent vitrectomy with membrane peeling at the time of intravitreal steroid treatment.

A sub-group analysis based on current treatment received (steroid alone or steroid plus surgery), diagnosis (diabetic, non-diabetic, and diagnostic subgroups of non-diabetic macular oedema), and prior history of treatment (focal laser or no focal laser) consistently showed statistically significant improvements in visual acuity in all groups. Among the various subgroups, mean visual acuity levels ranged from 20/106 to 20/159 at baseline with improvements to levels between 20/58 and 20/70.

"Our study represents a large series of eyes with diverse diagnoses and relatively long duration of follow-up. These results suggest intravitreal triamcinolone offers anatomic and functional benefits independent of a variety of baseline features. As more evidence comes to light regarding improvements achieved with intravitreal triamcinolone, clinicians may develop new paradigms for integrating this modality into their treatment armamentarium," said Dr. Sarrafzadeh.

Complications included elevated IOP (above 21 mmHg) in half of the eyes in the study. However, even in those eyes, mean visual acuity increased significantly from 20/123 preoperatively to 20/58 at the last visit. All of the eyes that developed elevated IOP required topical glaucoma medications and three eyes underwent trabeculectomy because of poor IOP control.

"When offering intravitreal triamcinolone, we need to be very candid with these patients in warning them about the potential complications, including IOP elevation and uveitis, and the interventions that may be needed to manage those events," Dr. Sarrafzadeh said.

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Other complications included hypopyon/fibrinoid uveitis which developed in 5% of eyes.

He noted that the rate of inflammation development in this series was relatively high compared with previous reports of intravitreal triamcinolone-treated eyes. He also acknowledged that while mean visual acuity improved from 20/132 to 20/70 in those eyes, it did not reach statistical significance.

However, he pointed out that all of the seven cases of hypopyon/fibrinoid uveitis occurred in patients treated early on in the study, and that no new cases have occurred since they adopted a practice of removing most of the preservative from the formulation. The preservative was the most likely cause of the inflammatory response, he said.

Dr. Sarrafzadeh now prepares the formulation by first withdrawing a 20 mg dose and allowing the triamcinolone particles to settle. He then decants the preservative-containing supernatant.

"Initially we were only injecting a dose of 4.0 mg, but European investigators had reported that up to 25 mg of triamcinolone could be injected safely, and we saw no added risk from using the 20 mg versus the 4.0 mg dose," he said.

Other alternatives are to wash the triamcinolone particles or to use preservative-free preparations. However, Dr. Sarrafzadeh considers washing a too cumbersome process and since the 20 mg dose has not increased complication rates, he has not been compelled to switch to the non-preserved product. The US National Eye Institute is now con-

ducting a study with a preservative-free product.

Based on his experience and available results from clinical trials, Dr. Sarrafzadeh has developed a treatment protocol for the management of patients with diabetic macular oedema. He now takes a number of factors into consideration before deciding whether to treat a patient initially with intravitreal steroids, laser photocoagulation, or combined vitrectomy with intravitreal steroids on a range of factors. These include standard visual acuity assessment, fluorescein angiography to evaluate ischaemia and leakage features, and OCT to determine macular thickness and the presence of vitreomacular interface abnormalities.

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our armamentarium. Therefore, rather than starting everybody with just laser treatment or at the other extreme, using everything in everybody, we believe it is better to target our approach based on the individual clinical situation. To that end, we have developed a simple list of recommendations on how to initiate intervention. We recognise, however, that is the easy part. Knowing what to do next if the treatment fails is more difficult and a decision that will require additional clinical trial data," Dr. Sarrafzadeh said.

According to his algorithm, laser photocoagulation is considered the first-line for treatment of diabetic macular oedema in eyes with discrete areas of leakage on fluorescein angiography accompanied by good visual acuity, or at worst a moderate decrease in acuity, along with mild to moderate macular thickening on OCT but without vitreomacular interface abnormalities.

In contrast, intravitreal triamcinolone is his treatment of choice for diabetic macular oedema characterised by diffuse leakage, moderate to severe macular thickening, moderate to severe loss of visual acuity, but when there are no vitreomacular interface abnormalities.

"Once the steroid has caused the swelling to settle down, patients are brought back for laser treatment, which I feel can be more effective if the retina is not excessively boggy with fluid," Dr. Sarrafzadeh said.

If there is co-existing vitreous traction, vitrectomy is performed concomitantly with intravitreal steroid injection.

"Treating medically with intrav-

itreal steroid only in this situation would be like putting a bandage over the wound without addressing the real problem, which is the need to relieve the vitreous traction," Dr. Sarrafzadeh said.

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