Finding Ocular Surface Inflammation

InflammaDry® – the first commercially available, rapid result, in-office test that detects elevated levels of inflammatory marker MMP-9 – helps document ocular surface inflammation

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Noecker presents this third case study in the InflammaDry® series.

Background

The patient is a 67-year-old woman with moderate primary open angle glaucoma and a history of numerous glaucoma treatments over the past few decades. She had undergone surgery with a Xen gel stent in the left eye approximately three months prior to the consultation, and was using difluprednate once a day. Her IOP was 12 mm Hg.

She presented with increased eye redness and complained of unstable vision while reading, as well as a foreign body sensation – all symptoms were worse in the right eye than the left.

Diagnosis

The patient had superior nasal step visual field loss in both eyes with corresponding optic nerve and RNFL thinning. On brimonidine, bimatoprost and dorzolamide, her right eye IOP was 18 mm Hg.

She had significant ocular surface disease in both eyes, with the right being significantly worse than the left. After her previous surgery, she had continued using glaucoma medications in the right eye while not using them in the left eye. This corresponded to a more inflamed tear film and confirmed the cause of the patient's symptoms.

The pro-inflammatory effect of glaucoma medications on the ocular surface is well documented. Benzalkonium chloride (BAK) is the agent most commonly implicated, but the active ingredient, pH and other excipients, as well as duration and frequency of application, have been linked to increased inflammation in ocular surface tissues. The changes are reversible with the use of tropical anti-inflammatory agents, but the longer the inflammatory changes have been present, the longer they take to dissipate.

Intervention and treatment

MMP-9 testing helped to confirm that the glaucoma medications significantly contributed to this patient's ocular surface problems; approximately six months before, she had tested highly positive for the presence of MMP-9 in both eyes.

After a review of both ocular surface and glaucoma status, the patient was scheduled for surgery in her right eye with the goal of controlling her IOP without the further use of glaucoma medications.

The role of MMP-9

A baseline evaluation for the presence of MMP-9 in our glaucoma patients is standard protocol – and can be performed using the InflammaDry® MMP-9 rapid point-0f-care diagnostic test (Quidel Corporation, San Diego, CA, USA). In my experience, most glaucoma patients suffer from ocular surface disease, which often bothers them more than the glaucoma.

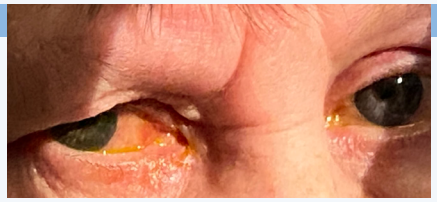

Figure 1. The patient's right eye.

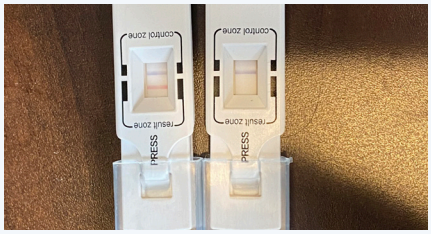

Figure 2. MMP-9 testing of right and left eye.

Figure 3. Right eye (lower test) shows much higher presence of MMP-9 than in the left eye, which is negative with no strong pink line.

MMP-9 testing in all patients helps to guide therapeutic decisions, and objectively documenting ocular surface inflammation helps with patient education on available therapy options.

Patient outcome

MMP-9 testing in this patient corroborated the clinical findings. By eliminating the glaucoma medications and using anti-inflammatory therapy in the form of corticosteroids, the changes were reversed through surgical intervention.

The patient was operated on successfully and is doing well off glaucoma medications, with an improving ocular surface status.