

Lipid-containing osmoprotective eye drops in contact lens wearers

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Dear editor

We would like to congratulate Kaercher et al¹ on their prospective study of Optive Plus (Allergan, Inc., Irvine, CA, USA) in the treatment of patients with dry eye. In this study the authors reported that Optive Plus effectively reduced the signs and symptoms of patients with all types of dry eye and they recommended the use of this artificial tear especially in lipid-deficient dry eye. We think that some important issues need more thorough discussion.

It is known that contact lenses (CLs) are becoming increasingly popular and a lot of people have begun to use CLs as an optical correction every day. Unfortunately, it was found that up to 50.1% of CL wearers report a sensation of dryness.² The presence of a CL has been shown to adversely affect the tear film characteristics, increase tear evaporation, and reduce the ability to produce adequate tears with concurrent increase in tear osmolarity. It has been suggested that increased tear osmolarity may accompany CL-related dry eye and even the most contemporary CL types (ie, silicone hydrogel lenses) can elevate the tear osmolarity.³

The recent report from the Contact Lens Discomfort Workshop reported that tear film changes in CL wearers are responsible for CL discomfort.⁴ Hyperosmolarity may be the trigger for an inflammatory cascade resulting in the production of inflammatory cytokines which can lead to increased apoptosis of corneal and conjunctival epithelial cells and conjunctival goblet cells.⁵ Lubricant eye drops that are able to restore the physiological osmolarity of the tear film could reduce the effects of hyperosmotic distress to cells, thus providing osmoprotection. Thus, we think that usage of osmoprotective eye drops can be reasonable in CL wearers. We are also conducting research in dry eye among CL users and we observed that instillation of osmoprotective eye drops (Optive) prevents the increment of tear osmolarity in patients wearing CLs, and Optive has the potential to improve ocular comfort more than the commercially available lubricant solutions. Optive eye drops contain erythritol and L-carnitine osmolytes that have been shown to provide osmoprotection.⁶ Optive Plus contains the ingredients of Optive in addition to a lipid component, castor oil.

The authors¹ mentioned in the study that Optive Plus is particularly effective in lipid-deficient dry eye patients. From the design of Kaercher et al's study,¹ we understood that CL usage is not an exclusion criterion. As we know that CL wearing, a common cause of lipid-deficient dry eye, is associated with increased tear evaporation,³ it is expected that lipid-containing osmoprotective artificial tears (eg, Optive Plus) might be more beneficial than other artificial tears for CL related dry eye by replenishing the lipid-depleted tear film and with their osmoprotective effect. However, in clinical

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practice lipid containing eye drops can induce blurring of vision especially in CL wearers. Thus, we wonder whether the authors should also recommend Optive Plus in patients using CLs and include these patients' results in their study or whether this particular subgroup of patients is not very appropriate for this therapy due to side effects including blurry vision and was thus excluded from the study.

Disclosure

The authors have no conflicts of interest to disclose.

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Authors' reply

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Dear editor

We are most grateful to Drs S Aslan Bayhan and HA Bayhan for their valuable commentary on our prospective study of Optive Plus® (Allergan, Irvine, CA, USA) and for highlighting the important issue of ocular dryness experienced by contact lens wearers.¹

We agree that it may be appropriate for contact lens wearers to use osmoprotective eye drops. Our study was an observational, non-interventional examination of how Optive Plus® performs in routine clinical practice. Consequently, it was not appropriate to exclude contact lens wearers – 10.7% of the patient population indicated that they wore contact lenses. The primary endpoint of our study related to efficacy in the different forms of dry eye disease (DED) (aqueous-deficient, lipid-deficient or mixed deficiency). Currently, the data have not been analyzed with regard to the effects of Optive Plus® in contact lens wearers, specifically.

We agree with Drs S Aslan Bayhan and HA Bayhan that an artificial tear for contact lens-related DED should replenish the lipid-depleted tear film and offer osmoprotection.² Optive Plus® contains the osmolytes erythritol, L-carnitine, and glycerol (in addition to carboxymethylcellulose and castor oil) and therefore has the potential to fulfil this role.^{3,4}

Drs S Aslan Bayhan and HA Bayhan have noted that the lipid components of artificial tears can cause blurred vision, which may be particularly disturbing in contact lens wearers. Early formulations of lipid-containing eye drops caused blurred vision,⁵ but this problem now seems to have been resolved.^{6,7} Indeed, homogenized eye drops containing a low-concentration of castor oil relieved the symptoms of dry eye without causing blurred vision in patients with meibomian gland dysfunction.⁷ In this study, although a minority of patients were contact lens wearers, only 1.7% (20/1,209) of patients reported blurred vision with Optive Plus®.⁴ Therefore, Optive Plus® may be a suitable option for the treatment of DED in contact lens wearers.

Once again, we would like to extend our thanks to Drs S Aslan Bayhan and HA Bayhan for their comments on our Optive Plus® study and we look forward to seeing the results of their research on Optive® in contact lens-wearing DED patients.

Disclosure

The authors have no conflicts of interest to disclose.

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