

Commentary: Water, water everywhere; alters eye when you drink

The authors of the accompanying article^[1] studied the effects of systemic hydration by drinking water on the biomechanics of the cornea. By testing the effects of both 500 and 1000 ml of water, they looked for a dose-dependent response as well. They note that a previous study using an Ocular Response Analyzer (ORA; Reichert Ophthalmic Instruments, Inc., Buffalo, NY, USA) showed statistically significant change only in corneal-compensated intraocular pressure (IOPcc).^[2] However, in the present study, CorVis ST (Oculus, Wetzlar, Germany) was used, which measured several other parameters, some of which were found to be significantly affected by whole-body hydration. Several systemic conditions including pregnancy^[3] may also affect ocular hydration, and thus corneal biomechanics, biometry, and intraocular pressure (IOP).

The water in you

More than 60% of the human body is water;^[4] hence, there should be no surprise that drinking more water would cause measurable changes in the body. The human eye is 98% water with the majority of it being the aptly named aqueous and vitreous humors. Therefore, it is indeed interesting and important to note that water drinking can change the axial length and IOP.^[5] The present study shows the effect of water drinking on the corneal biomechanics as well.

Importance of a closer look

Even though a previous study looked at some parameters of corneal biomechanics using ORA,^[2] the authors of the present study looked at more parameters of corneal biomechanics with another instrument – CorVis ST, which is a Dynamic Scheimpflug Analyzer. A closer look at these additional parameters helped to determine what changes are seen in the cornea.^[1]

Relevance in cornea

Diagnosis and treatment of some corneal disorders such as keratoconus and corneal ectasias may require proper maintenance of the whole-body hydration. Corneal

hydration may be affected by water drinking and alters the effect of corneal crosslinking treatment. Accuracy of refractive surgery procedures such as laser-assisted stromal *in situ* keratomileusis (LASIK), small incision lenticule extraction (SMILE), and photorefractive keratectomy (PRK) may also be affected by changes in hydration.^[6]

Relevance in glaucoma

Several studies have shown the effect of water drinking on IOP, and the importance of the Water Drinking Test as a provocative test for narrow-angle glaucoma has been debated.^[7] In addition, changes in corneal biomechanics and corneal thickness also can directly affect glaucoma diagnosis and treatment.^[8] It is thus important to look at corneal biomechanical properties that are independent of IOP.

Relevance in cataract

Changes in axial length^[5] due to whole-body hydration can potentially affect intraocular lens (IOL) power calculations, while increases in IOP and vitreous hydration can increase the risk of a complication in surgery.

Importance of being earnest

As we try to attain the best outcomes in our treatment, we should realize that there may be several factors which affect our diagnostics and treatments. Every year, we get better diagnostic instruments that produce a lot of data which may or may not be relevant. By earnestly tracing information that seems trivial, such as a patient's systemic hydration status, we may discover connections that were not previously known. Artificial Intelligence^[9] may help in sifting through this Big Data and finding these connections and their importance.

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