The digital environment and asthenopia

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The incidence of asthenopia is steadily increasing. The main culprit is the increasingly varied and intensive use of digital displays. This dual trend, however, is far from being a foregone conclusion. The observations and ideas for preventive solutions presented below were expressed during an interview with Dr. Marcus Safady, an ophthalmologist practicing in Rio de Janeiro and the 2013-14 president of the SBO - Sociedade Brasileira de Oftalmologia (Brazilian ophthalmology society).

Points de vue: What are Brazilian ophthalmologists seeing during consultations?

Dr. Marcus Safady: We are seeing more and more patients suffering from asthenopias in our practice. Nowadays, symptoms such as dry eyes, red eyes, eye strain sensations, blurred near vision, headache, peri-, intra- or retro-ocular pain, and glare sensations are extremely common. The origins of these symptoms may be refractive (uncorrected or poorly corrected), accommodative or muscular, and clinicians must consider their true cause to treat them effectively.

What correlation do you see between asthenopia and digital displays?

"Asthenopia symptoms are generally related to external causes correlated with the ubiquitous use of digital devices in our daily activities."

If the patient is properly corrected and presents no particular abnormality in binocular vision, asthenopia symptoms are generally related to external causes. Foremost among them is the intensive use of digital devices, now ubiquitous in our daily lives. When we work in front of a screen our eyes blink less often, resulting in dryness of the ocular surface. The effort of accommodation and convergence is also more sustained due to the increased proximity of multiple displays (e.g. the smartphone and tablet are used at closer distances than the computer). Our eyes make an effort to focus and converge on more or less pixellated targets, whose quality and contrast vary, while remaining exposed to high screen brightness levels. The light emitted is characterized by a predominant dazzling white light that peaks in the blue at short wavelengths. An ophthalmic impact is unavoidable.
Does this type of disorder affect some populations more than others?

These displays exacerbate existing visual defects and also affect those who do not wear glasses. Studies show that 60% to 90% of people using digital displays have more or less troublesome symptoms of eye disorders, regardless of their visual correction. Ophthalmic consultations reveal this problem in adults, children and adolescents. In fact, young people, who often keep their eyes glued to video games, cell phones and computers all day long, even at school, are a particularly vulnerable population.

What are the most common solutions and recommendations?

"Displays exacerbate existing visual defects and also affect those who do not wear glasses."

Patients may not be aware of the causes. When they consult, they usually come in for a refractive problem. They complain of eyestrain and subjective symptoms. Ophthalmologists need to be attentive and play an active role in the fight against this very real scourge. Recommendations are simple: a good visual examination (including visual acuity, binocular vision and accommodation), a refractive correction, ergonomic advice (i.e. best practices for the use of digital devices) and the prescription of a treatment (i.e. eye drops to relieve ocular dryness) or a preventive solution such as appropriate ophthalmic lenses.

How is treatment for this problem handled in Brazil?

"Young people, who often keep their eyes glued to video games, cell phones and computers all day long, even at school, are a particularly vulnerable population."

In Brazil, as in the other countries, eye problems related to the ubiquity of digital displays are widespread. Vision care professionals are increasingly aware and a "standard" protocol is beginning to emerge. It is organized into four main points and is potentially very beneficial for the patient. First point: increasingly frequent consultations with age, arriving finally at an annual rate (eye check once a year). Second point: ergonomic advice (on posture, lighting, rest, etc.) to avoid exacerbating the problem. Third point: better lubrication of the ocular surface, simply by blinking more frequently or via artificial tear solutions. Finally, the fourth and central point of the prevention plan for asthenopia related to digital device use involves the prescription of ophthalmic lenses adapted to the specificities and pervasiveness of digital displays.

What are the desired characteristics for these preventive lenses?

“The central point of the prevention plan for asthenopia related to digital device use is the prescription of ophthalmic lenses adapted to the specificities and pervasiveness of digital displays”

They are two in number. The first is the provision of additional refractive power at the bottom part
of the lens to relieve the eye’s accommodative effort. A few fractions of additional diopter are invaluable when working for hours in front of a digital display. The second is the presence of a filter blocking blue light and the glare effect: a selective anti-reflective treatment reduces screen brightness and blocks harmful blue light. The perfect ophthalmic lens must combine both features to fight effectively against asthenopia generated by digital device use.

**These characteristics seem to be consistent with the ophthalmic lens offer called Eyezen and designed by Essilor research centers?**

Absolutely!

**Key Takeaways**

- **Intensive use of digital displays increases the incidence of asthenopia.**
- **The problem affects all age groups and as many people not wearing glasses as those with visual defects.**
- **In Brazil, an easy-to-use four-point protocol is helping to fight effectively against this type of disorder.**
- **Glasses combining additional refractive power in the bottom part of the lens and a blue light filter are the main preventive solution prescribed for asthenopia related to digital device use.**