Contrast sensitivity and visual hallucinations in patients referred to a low vision rehabilitation clinic

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Contrast sensitivity and visual hallucinations have significant consequences for the patient

The paper on contrast sensitivity and visual hallucinations by Jackson *et al*¹ (see pages 296) in this issue draws attention to the fact that we will never detect correlations among factors to which we do not pay attention or that we are not interested in.

Both contrast sensitivity and visual hallucinations are items that are too often omitted from the medical history and the eye examination. One of the reasons probably is that neither finding can contribute much to the differential diagnosis. However, both conditions have significant consequences for the patient.

Many people who experience visual hallucinations are deeply concerned and afraid that it is a sign of some mental deterioration. They are greatly relieved to find out that this phenomenon is well known, has a name and is quite common among patients with vision loss.

Those with experience in vision rehabilitation know that loss of contrast sensitivity can have a greater impact on the activities of daily living than the loss of visual acuity alone. After all, most objects around us are far larger than the letters on a letter chart, but also have far less contrast. Patients with contrast sensitivity losses are often aware that something is wrong, but they cannot pinpoint it. They will only be frustrated if their doctor tells them not to worry, because their high contrast letter chart acuity is normal. Studies at the Smith-Kettlewell Institute in San Francisco² have shown that elderly subjects with normal daylight vision may drop to 6/60 (20/200) or less under conditions of low contrast, low illumination and glare.

When patients know about their condition, they can be appropriately cautious. Care when stepping off a curb (grey concrete against grey asphalt) may well avoid a broken hip. Avoiding low contrast situations, such as night driving, may avoid even graver consequences.

If family members are aware that mother has a problem with low contrast, they will not accuse her of being clumsy and will hopefully avoid serving her white rice on a white plate on a white table cloth or milk in a white cup. People can help themselves by creating more contrast in their environment, such as by using a dark cutting board for light coloured food items and a light cutting board for dark items. Often, more light can also be helpful.

The fact that finding reduced contrast sensitivity does not clearly contribute to the differential diagnosis is, in part, the result of a vicious cycle. If we never measure it in clinical practice, we are unlikely to find clinical correlations. Contrast sensitivity losses, like visual acuity losses, can result from changes at three different levels. Optical factors (as in cataract) can degrade the retinal image, retinal factors (as in age-related macular degeneration (AMD)) can interfere with the translation of that image to neural impulses and neural factors (as in multiple sclerosis, optic neuritis) can fail to appropriately interpret the pattern. While the traditional contrast sensitivity measures may not distinguish between these causes, they have been shown in several studies to be sensitive to early changes. Contrast sensitivity changes may be more sensitive than high-contrast

acuity in detecting subtle refractive changes.³ Peri-foveal contrast sensitivity losses have been found in the fellow eyes of patients with AMD.⁴ As the possibility of early AMD treatments appears on the horizon, early detection will become more important. Contrast sensitivity losses in optic neuritis are well known and often take longer to recover than high-contrast acuity losses.⁵

Testing for contrast losses is not difficult. The Pelli-Robson wall chart has been used in many studies, including that reported in this issue. Handheld cards are perhaps even easier to administer and include the Mars Card, the SKILL chart⁵ and the Colenbrander Mixed Contrast reading cards.⁶ Your minimal extra effort will be rewarded by patient appreciation, by a better quality of life for your patients and maybe by fewer accidents, and hopefully there will be earlier treatments in the future.

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