

Migraine sufferers see colour

In New Zealand, 15% of women and 6% of men suffer from migraines. Between 40-50% of sufferers have a family history of migraines and attacks can last between 4 and 72 hours. The cause is not understood and there is no cure. An instrument, the 'colorimeter', which emanates a rainbow of colours is giving fresh hope to many migraine sufferers.

The colorimeter allows coloured light to be projected onto a page of text or a striped pattern that migraine sufferers would normally find visually disturbing. Many migraine sufferers are sensitive to a particular colour, by having a lens tinted with a colour that will absorb the offending colour, this may assist in hindering the onset of migraines.

For example many sufferers find that a migraine will be triggered by an excessive amount of glare. However it is generally a particular colour they are sensitive to. So although a standard grey sunglass lens may assist, a blue-green lens, which absorbs mostly red light, would be more effective.

Bridgman & Dean Optometrists purchased a colorimeter two years ago, partly for research purposes. Placebo controlled studies published in the UK optometric and medical literature demonstrated the effectiveness of Cerium tinted lenses in assisting children with specific reading difficulties. It was felt by Gavin and David Bridgman, given the work they were doing with learner readers, that the Colorimeter would be a useful addition to the practice.

This proved very early on to be the case, with improvements in reading in all children prescribed for. The results can be very dramatic and instant. The practice uses the Wilkins Rate of Reading Test (www.ceriumvistech.co.uk) to assess children's ability with and without coloured lenses and/or overlays. It gives a reliable indicator of the benefits of such therapy in a very short time.

A lot of these children also found relief from headaches caused by reading, and most had a parent who had migraines. There are several families where the parents now have prescription tinted lenses for migraine and/or reading difficulties after they saw the effect on their vision having put on their child's spectacles.

It is also known that dyslexia is associated with ambidexterity. David Bridgman refers to a lecture given by psychologist Karen Waldie at the College of Optometrists' conference last year where she quoted "if you look at MRI scans of dyslexics when they do visual reading tasks, they are frequently using both sides of the brain rather than just the left side, where a normal reader would be."

In 2001 Gavin was part of a think tank of querying if ADHD and dyslexia had a pathophysiological factor. He found in 1999 that amblyopia could be associated with ambidexterity.

"We found that some children were assisted with auditory feedback. A pilot study at Otago University found this was limited to a few children, all who were ambidextrous. However, the benefit was unpredictable. A child psychiatrist who was aware of my amblyopia finding, is also of the opinion there is something wrong with the processing in ADHD. Most of these people have confused laterality, that is, poor coordination and ambidexterity. I was also made aware migraineurs were often ambidextrous.

David explained how the optometrists screen for visually induced migraines.

"During our standard examination, if requested we can do a Pattern Glare Test, at no charge, that involves presenting several striped patterns in sequence. With a frequency of one cycle per minute of arc, this will generate an aversive response in about 95% of people with visually induced migraines. Patterns with significantly wider or narrower stripes will not cause the same response. We can then use handheld lenses in flippers to get an approximate tint and demonstrate to the patient that there will be some benefit, before proceeding to colorimetry."

Colorimetry takes about 20 minutes and produces reliable, repeatable results. A sample tint is then shown to the patient, who can view text or stripes or just outside lighting with it.

In April David was interviewed along with a patient, 'TE', on National Radio. TE, a chronic migraine sufferer, previously would be subjected to morphine IV 4-5 times a week in an effort to control her migraines. Now after wearing her prescription 'purple' lenses she finds her attacks have been reduced to maybe once or twice a week.

"I was having three migraines that would last 2 days every week," said TE. "I'm now down to 1 which lasts 2 days so it's dropped a lot because of the lenses and I have a life. The difference is unbelievable, things don't look as glary to me now and when I read it doesn't jump all around the page."

Gavin believes there are several hundred of these Colorimeter machines now in use around the world.

"They have not been used here as there has been no expla-

nation as to how tinted lenses could work. In my opinion, I have come up with the first credible explanation that shows there is an association with ambidexterity plus the unexpected reduction in print jumping."

Visique Wanganui has been using the Colorimeter for about 10 years now. Former partner Mike Webber had seen it in use in the UK and brought one back. Optometrist John Mellsop said their practice uses the Colorimeter for a number of patients who have been diagnosed with Meares-Irlen Syndrome and need tinted lenses fitted into their frames.

"We saw a niche because in order to determine this tint, assessment is carried out on the Intuitive Colorimeter. With this instrument it is possible to examine the benefits of colour on reading in fine detail and with controlled variables.

The results of the test can be produced both reliably and accurately in the form of precision tinted lenses by utilising a unique system specially developed to complement the Intuitive Colorimeter. With this new method of tinting there are over 6,700 different hues available and so any colour determined through the Colorimeter can be matched," he said.

Mr Mellsop said the Colorimeter has also been helpful for people who suffer with migraine and epilepsy but he said it is not a "cure-all".

Case History.

Relief of Migraine with Colour Response Lenses.

Colour response is the relief of visual stress by the use of selected tinted lenses.

The quotations are from the patient during a Radio New Zealand interview.

Examination and prescription.

Patient. Ms T. E. Age 30 Complaint. Unable to work due to headaches. Has "three migraines each week, which last two days each time. I have IV morphine 4 to 5 times each week for relief." Ambidextrous. Never had strabismus. Not on preventative medication. Sunglasses were "sort of helpful" compared to her untinted glasses.

Wearing. R + 1.75/-0.25 180 6/8
L + 2.75/-0.25 180 6/15

Add 1.00 progressives. Has untinted and photochromic lenses.

Examination.

Patient is highly aversive to pattern 2 of the IOOL Pattern Glare test. This is one of a series of differing sizes of black and white stripes viewed at 40 cms.

Refraction R + 1.75/-0.25 180 6/8
L + 1.75 6/15 Left eye amblyopic.

Cerium Colorimeter. Maximum relief with saturation 50%.

Prescribed as saturation 45%, purple and rose combined tint, with addition 1.00 progressive to above refraction. To wear according to benefit received.

Results.

Glasses worn "everyday." The headaches now occur, "once or maybe sometimes twice a week. They are not so severe. The print is not jumping around the page when reading. Colours are not so bright, and the glare is gone." TE comments she is young for progressives. "I now have a life." "Unbelievable."

Discussion.

Patient TE is an isometric, nonstrabismic, amblyope, and is self reporting ambidextrous.

Bridgman (1.) found that isometric, non strabismic amblyopes such as TE were ambidextrous in 15 consecutive cases. There is a strong relationship of migraine and dyslexia with ambidexterity. Most migraine sufferers are ambidextrous or have an immediate relative who is ambidextrous. The IOOL Pattern Glare test is a new test. It is highly specific in diagnosing common migraine. It is obtainable from I.O.O. Sales Ltd admin@ioosales.co.uk or I can send a copy on request: gavinbridgman@actrix.co.nz

The Cerium Colorimeter projects colour on to a test pattern with stepless changes of hue and saturation. It gives a prescription for colour response in about 20 minutes. The selected tint is put in a trial frame to assess the benefit with indoors and outdoor conditions and with reading. The tint selected by TE was very specific. The benefit was immediate.

More information can be obtained from Ceriumgrp@aol.com or www.ceriumvistech.co.uk

It is common for those wearing precision tinted lenses to report print no longer jumps on the page.

There are several papers on the use of tinted lenses for migraine. Patel (2.) gives information on diagnosing and managing migraine in practice. The use of the colorimeter has greatly increased the use of tinted lenses in U.K, Europe, and South Africa. One difficulty has been that of predicting if a particular patient will be colour responsive. There are three



David Bridgman and the Colorimeter.

predictive factors of colour response. Effective preventive prescription medication usually removes the colour response Patient TE only migraine medication is morphine, which is used as a treatment. A response to the pattern glare test, and the presence of or a strong hereditary factor of ambidexterity are strong predictors of benefit. For those who are colour responsive the lenses give constant habituation. Migraine occurs in all degrees of severity. Some people have several attacks each week and constant discomfort. Others never have an attack and have only intermittent discomfort which may not be identified as migraine.

If previous migraine attacks were less frequent than once per week, the lenses usually give the opportunity to stop all migraine attacks. Migraine is caused by hypersensitivity or hyposensitivity of small discrete portions of the cortex. Sensory inputs of vision, hearing, taste, smell, touch and endogenous sensations can be overloaded. The problem sensory inputs are very specific. Almost all who suffer from migraine have glare on bright overcast days, and have flicker and pattern sensitivity. Woodruff (3) found that anisometric non strabismic amblyopes were more commonly left eye amblyopic. The ratio was right eye amblyopia 2 to left eye amblyopia 3. The association of ambidexterity with isometric nonstrabismic amblyopia, and that left eye amblyopia is more common than right eye amblyopia, indicate that deficits in processing in the visual cortex can have profound effects.

The deficits in migraine are limited to a small part of the cortex. They would affect only part of any perceptual input. They would be neurological, and be able to be induced or counteracted immediately by adjusting the stimulus.

The anatomy of the visual pathways has similarities to the auditory pathways. Left ear/ right ear imbalances are found with dichotic listening paradigms when there is ambidexterity. People with sound triggered migraines are likely to be ambidextrous. It is known that there are deficits in visual processing with migraine. It is reasonable to believe that these deficits could affect the colour columns in the visual cortex. This provides a credible understanding of the mechanism of colour response. It explains the results with TE and many others.

The visual cortex has efferent functions including accommodation and fixation. The benefit of a near addition for those with migraine symptoms has not been assessed. It did not seem to assist TE. Print jumping on the page is not a common complaint with migraine. TE and many others were surprised that the print becomes steady as they thought print jumping happened to everyone. This result reinforces the acceptance that precision tinted lenses have an effect on cortical function.

Conclusion.

Migraine should be investigated in those with asthenopia as it can be managed with counselling, medication, or colour response lenses. There is adequate knowledge of the visual pathways and processes in migraine to account for the prescribing of precision tinted lens for relief of visual stress.

References.

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