Ocular Update

Strabismus not just a paediatric problem

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in Toronto

Strabismus, often considered a paediatric problem, may not be referred for treatment in adults because of a common misconception that the surgery in adults is purely cosmetic. But correcting problems such as double vision and misaligned eyes can improve function, decrease disability, and improve quality of life.

Indeed, there are several eye muscle problems that can be misinterpreted, and end up being thought of as needing treatment or a therapy that turns out to be inappropriate, said Stephen Kraft MD, from the University of Toronto. At the recent Annual Crawford Day conference at the Hospital for Sick Children he presented several examples of strabismus conditions that fall into these categories.

Take, for example, a patient who cannot abduct one eye.

“The most common thing people think about is a sixth nerve palsy which can be a serious problem, but there are certain features that can lead to a diagnosis of congenital Duane Retraction Syndrome (DRS) instead,” he said.

DRS has key features that don’t appear in sixth nerve palsy. One is retraction of the eye into the eye socket. When the patient tries to look in the direction away from that eye, the eye itself begins to retract into the socket. This is because there is a misalignment – the lateral and medial rectus muscles get stimulated at the same time.

Along with this is a narrowing of the eyelid fissure.

DRS is generally present at birth. So another aspect of diagnosis lies in the history. If the patient has had the problem since birth or infancy, the condition hasn’t changed, and there is retraction of the eyelid, then think DRS, Dr Kraft said.

A second problem that may present in the ophthalmologist’s office is a patient who has trouble reading and gets eye strain because they have convergence insufficiency. These patients are usually treated with eye exercises to promote strengthening of the up-close efficiency of focusing. But, in some adults, the exercises don’t work. “The reason is that the examiner has forgotten to check the patient’s focussing range,” Dr Kraft said.

If the near-vision focus is not normal, the first treatment isn’t eye exercises but rather reading correction.

“Sometimes by helping the reading and making it more efficient and clear, the problem of convergence can actually take care of itself,” he said.

And the reading problem doesn’t always happen in just patients who are over 40 – check younger adults with this complaint too. Oftentimes these patients have their new glasses, wait and see if the exercises are still needed later, he advised.

Double vision issue

Then there are issues relating to double vision. Appropriate use of tests and asking the right questions are the key to making correct diagnoses.

Dr Kraft has seen patients complain of double vision – coincidently after they received new glasses with a strong prescription. For these patients, the problem could be the glasses themselves. If glasses aren’t centred properly, a prism effect can be produced which creates an unstable eye alignment. For patients with strong prescribing, check the centring and design of the glasses first, he said.

Some patients seeing double might have the problem in only one eye. Monocular diplopia can be due to any of several causes ranging from an early cataract, corneal scars, keratoconus, astigmatism, or more. With patients who complain of double vision, ask whether it’s in one eye or both, and test the eyes separately and together, he said. If the problem is in one eye, it’s not a muscle problem.

Then there are the patients who tell an eye examiner they see double, the examiner doesn’t see anything wrong and so refers the patient to an ophthalmologist. Asking the right questions can reveal the patient has simply noticed a normal phenomenon – the fact that objects beyond or in front of an object you focus on appear as double.

Patients with trauma to the eye are a whole other story. A common problem is double vision that occurs when the patient tries to look up – supraduction. Caused by an orbit fracture, the eye muscle below is bound.

“Ophthalmologists often forget that if you have trauma to the socket, you can also physically damage the muscle that helps you look down. It can be traumatised at the time of surgery, or secondarily be affected by the surgery to correct the fracture in the socket,” Dr Kraft said.

Problems looking down can be far more disabling to a patient than the upwards problem since it can affect everything from reading to being able to safely navigate walking up or down stairs. It’s a problem that needs to be kept in mind, and patients should be warned if it as a potential problem from surgery.

“Nature takes six to 12 months to heal these transient palsies. Some will get better, some won’t. Surgical intervention shouldn’t be done for at least six months to allow for spontaneous recovery,” he said.

Then there are adults who had surgical correction for crossed eyes in infancy. These people might go in for testing Muscle testing reveals that the eyes have a tendency to cross, and the patient might have surgery recommended. Yet, many of these patients don’t need surgery.

“Why? Because an overly aggressive muscle test will show what the eyes do at extremes, but not that the patient actually has normal function when the eyes are allowed to work together.

“If you use a cover and prism to see how their eyes turn too aggressively, you can actually disrupt the binocular vision and the eyes can cross a certain number of degrees.

It may be beyond what you’re happy with, but it may not be something that is affecting your patient’s daily life,” Dr Kraft said.

He likens this sort of situation to a person prescribed blood pressure medication because their blood pressure went up during a scary movie. It doesn’t give the whole story. Some people simply have a small but stable strabismus angle that doesn’t cause problems.

“The correct measurement of these involves a two-step process where you bring the prism and cover in at the same time to diagnose their static binocular alignment, then do the traditional cover test to diagnose the total tendency they have,” he said.

Strabismus surgery in adults

In a separate presentation, John D Roarty, MD, from the department of ophthalmology at Wayne State School of Medicine in Detroit, Michigan, US, reminded the audience that surgical treatment of true adult strabismus is not simply a cosmetic procedure. It restores the eye back to its normal condition, and gives patients proper function.

Surgery can eliminate diplopia, re-establish binocularity, and restore a fuller peripheral field (which can improve driving and other tasks). It can also improve a person’s self image, as well as improve function in everyday activities and work, he said.

“Changes an adult strabismus patient can experience after surgery include better depth perception, better field of vision, improved social acceptance, and better job performance,” he said.

There can be a number of causes and types of strabismus in the older adult, ranging from problems related to other eye problems (it can occur after cataract surgery, for instance), and age-related changes in the eye. If patients need refractive surgery, do that first before considering strabismus surgery, he said.

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and other structures, and the absence of valves in the collecting veins. The principal routes of infection are either exogenous (after trauma or surgery), or endogenous (with extension from adjacent structures).

Staphylococcus aureus is the principal cause of both post-traumatic and post-surgical orbital cellulitis.

Dr O’Brien used several photos to illustrate exogenous orbital cellulitis: one of a man who had suffered severe trauma from a pool cue, one of a man whose eye had been damaged by a pencil, and one of a man who had developed the condition after surgical repair of retinal detachment.

O’ther risk factors for orbital cellulitis are sinusitis, diabetes mellitus, and immunosuppression.

As with preseptal cellulitis, signs of orbital cellulitis include hyperaemia of the skin, distension of the eyelids, and conjunctival inflammation. In addition, orbital cellulitis may cause orbital pain (which Dr O’Brien called the “hallmark” of the condition), proptosis, and limitation of ocular motility.

Exogenous orbital cellulitis should be managed by culturing the purulent material and administering intravenous nafcillin, intravenous tobramycin, or both.

When sinusitis is the underlying factor in orbital cellulitis, the most common organisms are Streptococcus pneumoniae, Staphylococcus aureus, Haemophilus influenzae, and non-spor forming anaerobes.

Dr O’Brien said that orbital cellulitis with sinusitis often requires collaboration with otorhinolaryngology to obtain material for smear and culture, and then to initiate high-dose therapy with intravenous ceftriaxone. He also warned ophthalmologists to be suspicious of the possibility of mucormycosis if diabetes mellitus, immunosuppression, or orbital apex syndrome are present.

Mucormycosis requires a mandatory biopsy for histopathology and culture, and high-dose intravenous amphotericin B.

Dr O’Brien reminded ophthalmologists to be alert to the signs of caesarean sinus thrombosis: rapid progression of orbital congestion; high fever, nausea and vomiting; and loss of vision in the affected eye.

Finally, he emphasized the high prevalence of infection in orbital cellulitis.

“When you’re doing a differential diagnosis of ptosis, infection should be considered at stages one, two, and three,” he said.

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