

Eyes on the Evidence



An Ophthalmology bulletin
from the JET Library

[Type here]

Ocular myasthenia gravis: an update on diagnosis and treatment

Source: Current opinion in ophthalmology

In a nutshell: Ocular myasthenia gravis (OMG) is a variation on myasthenia gravis. It's confined to the eye muscles although it can become more generalised over time. Diagnosing it can be difficult but two new tests which look for antimuscle-specific tyrosine kinase and LDL-related receptor-related protein 4 can help and – according to this article by Elizabeth Fortin from Massachusetts Eye and Ear – should be included in the diagnostic algorithm of OMG in appropriate clinical situations. The mainstay of treatment for OMG has not significantly changed over the past years but the increasing availability of steroid-sparing agents improves disease control while minimising steroid-induced complications.

You can read the abstract of this article [here](#).

IgG4-related disease and the eye

Source: Current opinion in ophthalmology

In a nutshell: IgG4-related disease is a long-term, inflammatory condition characterised by tissue infiltration with lymphocytes and fibrosis. It's now emerging as the underlying cause of several disorders in the head and neck such as sclerosing orbital pseudotumour and orbital myositis. Although clinicopathologic correlation remains the cornerstone of diagnosis other tests such as flow cytometry and PET-computed tomography have a high sensitivity and certain radiological features are recognised to be particularly suggestive, such as infraorbital nerve enlargement. IgG4-related disease often responds to steroids although incomplete responses and relapses are common; rituximab is also emerging as a promising new therapy. In this article Bart K. Chwalisz, from Harvard Medical School outlines some of the new developments in the study of this disease.

You can read the abstract of this article [here](#).

Idiopathic intracranial hypertension

Source: Current Opinion in Ophthalmology

In a nutshell: Idiopathic intracranial hypertension (IIH) is a vision-threatening disorder that mainly affects obese women of child-bearing age and is becoming more common as people get fatter. Several theories have been proposed about what causes it including abnormalities in cerebrospinal dynamics, metabolic causes and genetics. Traditionally, treatment was based on clinical experiences and retrospective studies but

[Type here]

a new trial – the Idiopathic Intracranial Hypertension Treatment Trial – has provided some evidence that acetazolamide could be a well-tolerated first-line therapy in IIH patients with mild vision loss. Other recent studies have shown venous sinus stenting as a well-tolerated and effective surgical alternative for patients with refractory IIH. In this article Madriz Peralta, from Massachusetts Eye and Ear Infirmary, reviews the latest evidence on IIH.

You can read the abstract of this article [here](#).

Neuroretinitis

Source: Current Opinion in Ophthalmology

In a nutshell: Neuroretinitis is an inflammatory disorder of the eye. Its symptoms are optic disc oedema and the delayed development of a macular star due to optic nerve swelling toward the macular structures. It can be divided into idiopathic, infectious and recurrent. In this article Aliaa Abdelhakim, from Columbia University in New York, reviews some of the evidence about neuroretinitis. Its clinical presentation includes impaired visual acuity, dyschromatopsia (partial colour blindness), relative afferent pupillary defects and visual field abnormalities. Treatment varies according to the cause and where this is due to infection some authors favour treatment with antibiotics early in the course of the disease to limit progression and ensure eradication of the organism responsible.

You can read the abstract of this article [here](#).

Giant Cell Arteritis

Source: Current Opinion in Ophthalmology

In a nutshell: Giant cell arteritis (GCA) can cause irreversible loss of vision and the steroids used to treat it can also cause illness themselves. In this article Anthony Sammel, from Royal North Shore Hospital in Australia, reviews the current knowledge about this condition. Vascular imaging is being used more and more in diagnosis and results from recent vascular ultrasound and high-resolution cranial MRI studies have led some groups to suggest forgoing temporal artery biopsy in some patients. Tocilizumab, a monoclonal antibody that inhibits IL-6, has recently been introduced as a treatment and has been shown to be effective in sustaining steroid-free remission for a year. New publications have also provided evidence about how to interpret minimally-inflamed biopsies and about the role the varicella zoster virus (chickenpox) might play in the pathophysiology of GCA. Other research has improved our understanding of the immunopathology of GCA including the role of Th1 and Th17 lymphocytes.

You can read the abstract of this article [here](#).

[Type here]

Thyroid Eye Disease

Source: Current Opinion in Ophthalmology

In a nutshell: In this article Zhen Li, from Capital Medical University in Beijing, reviews the state of play in Thyroid Eye Disease (TED). Smoking has recently been shown to have an impact on some of the genes involved in causing this condition although the effects are reversible when people give up smoking. Selenium deficiency and high cholesterol are also risk factors and their management could decrease the incidence and severity of TED. Immunomodulatory drugs have shown some promising results although further research into them are needed. And a new technique of ³²P brachytherapy has been shown to have quick therapeutic effects on TED without significant side effects.

You can read the abstract of this article [here](#).

Cytomegalovirus

Source: Current Opinion in Ophthalmology

In a nutshell: Cytomegalovirus (CMV) is part of the herpes family of viruses and in this article Ashlin Joye, from the University of California in San Francisco, looks at how it can affect people's eyes. Molecular testing has now found that CMV infection is frequently present in cases of Posner-Schlossmann and Fuchs keratouveitis syndromes whose causes were previously unknown. The virus can lay dormant but then become reactivated, start to replicate and invade the trabecular meshwork and endothelium leading to recurring bouts of high eye pressure and endothelial cell loss. Antivirals can help and topical ganciclovir is a promising therapy that needs investigation. CMV retinitis – previously thought only to affect people with weak immune systems – has now been reported on a number of occasions in people thought to have healthy immune systems.

You can read the abstract of this article [here](#).

Retinal detachment and the macula

Source: Clinical Ophthalmology

In a nutshell: Sometimes retinas can become detached without affecting the macula at the centre of the retina. In this study Yuji Yoshikawa, from Saitama Medical University in Japan, led a team of researchers using a technique called swept-source optical coherence tomography angiography to check whether, in cases of retinal detachment not affecting the macula, the blood vessels in the macula were affected. Five people took part in the study which found that, in these people at least, the macular microvasculature, remained intact.

You can read the whole of this article by clicking on the **Download Article** link [here](#).

[Type here]

Supranuclear eye movements and nystagmus in children

Source: Eye

In a nutshell: In this article D. Osborne, from University Hospital, Southampton, presents a review of the current state of play *a propos* abnormal eye movements in children, including nystagmus. The article reviews evidence, gives a best-practice guide for a structured, clinical examination, and has a guide to clinical interpretation and age-appropriate norms. It also details the more common specific clinical findings and how they should be interpreted and used to guide further management.

You can read the whole of this article [here](#).

Peripapillary atrophy (PPA), glaucoma and short sight

Source: British Journal of Ophthalmology

In a nutshell: Peripapillary atrophy (PPA) is a clinical finding associated with thinning of the retina and the choroid and disruption of the retinal pigment epithelium (RPE) in the area surrounding the optic disc. In this study Min Kyung Song, from the University of Ulsan, in South Korea, led a team of researchers evaluating the changes in PPA according to its shape and exploring the relationship between PPA progression and glaucoma worsening in short-sighted people. The researchers found that people with concentric PPA were older than people with eccentric PPA and that axial length was longer in the eccentric group than the other groups. 65% of the concentric group and 42.9% of the eccentric group showed PPA progression. Being older, worse visual field mean deviation at the start of the study and greater baseline PPA area were all associated with PPA progression in people with concentric PPA. Glaucoma progression and longer axial length were associated with PPA progression in people with eccentric PPA.

You can read the abstract of this article [here](#).

Peripapillary blood flow and glaucoma

Source: Clinical Ophthalmology

In a nutshell: In this study Grace M. Richter, from the University of Southern California, in Los Angeles, led a team of researchers looking at how glaucoma affected papillary blood flow. The researchers studied 38 people with primary open-angle glaucoma and 17 unaffected people measuring their blood vessels with optical coherence tomography angiography (OCTA) and carrying out visual field tests. The researchers found that the more severe someone's glaucoma the worse their circulation in their retinal-nerve-fibre layer. Focal reductions in the inferior hemisphere and inferior and superior quadrants were most significant. However OCTA parameters had stronger associations with structural rather than functional measures of glaucoma.

[Type here]

You can read the abstract of this article [here](#).

Eye pressure and phacoemulsification

Source: Clinical Ophthalmology

In a nutshell: In this study researchers from the Pontifícia Universidade Católica de Goiás in Brazil compared the effects on eye pressure of phacoemulsification and trabeculectomy to phacoemulsification on its own. 182 eyes were operated on by isolated cataract surgery while 49 eyes were operated on with combined phacoemulsification and trabeculectomy. The researchers found that there was a more significant reduction in ocular pressure in eyes which had had the combined surgery.

You can download the whole of this article [here](#).

Cataract surgery, short sight and busy surgeons

Source: Ophthalmology

In a nutshell: This study, led by Bobeck S. Modjahedi, from Southern California Permanente Medical Group in California, looked at how people's pre-operative vision and the number of operations their surgeons carried out affected how well they did after a cataract operation. The researchers found that patients whose vision is approximately 20/32 or worse were more likely to have significant visual gains after cataract surgery. However, the number of operations their surgeons carried out did not make a 'clinically meaningful,' difference to patients' outcomes.

You can read the abstract of this article [here](#).

TRAb and thyroid eye disease

Source: Eye

In a nutshell: Graves' disease is an autoimmune disease which can cause hyperthyroidism. This can, in turn, lead to thyroid eye disease in which the eye muscles and fatty tissue behind the eyes become inflamed. In this article Jonathan C.P. Roos, from Ipswich Hospital NHS Trust, led a team of researchers looking into the use of thyrotropin receptor antibody (TRAb) as a marker of disease activity to guide treatment. After a retrospective review of 105 patients with thyroid eye diseases the researchers found that TRAb levels varied with time, were correlated with disease activity and were affected by smoking and endocrine control. Surgical thyroidectomy was associated with a reduction in antibody levels and a reduced rate of thyroid-eye-disease reactivation compared to radio-iodine ablation.

[Type here]

You can read the abstract of this article [here](#).

Cataract surgery and lens implantation

Source: Clinical Ophthalmology

In a nutshell: In this study John A. Hovanesia, from the Jules Stein Eye Institute in Los Angeles, looked at the outcomes of cataract surgery implantation with bilateral accommodating or bilateral multifocal intraocular lenses. 117 people took part in the study. 68 had received accommodating lenses and 49 had received multifocal ones. All of the patients had had their surgery at least two years ago with the average time since surgery being 5.4 years. Overall, there were no significant differences between the two groups and about 90% of patients in each group declared themselves 'very satisfied,' or 'somewhat satisfied,' with their vision. Only one in 11 patients found their vision to be worse than expected after the surgery.

You can read the abstract of this article [here](#).

Surgery for retinal detachment

Source: Ophthalmology

In a nutshell: Rhegmatogenous retinal detachment (RRD) happens when a tear in the retina leads to fluid accumulation with a separation of the neurosensory retina from the underlying retinal pigment epithelium. In this study a team of researchers led by Roxanne J. Hillier, from St Michael's Hospital, Toronto, compared two types of surgery for RRD – pneumatic retinopexy and vitrectomy. In pneumatic retinopexy doctors inject an expanding gas bubble into the eye. The bubble floats over the detached area and pushes it back into place; doctors then use a freezing device to seal the retina against the wall of the eye. In a vitrectomy three small incisions – about 1mm in length – are made in the white of the eye to enable fine instruments to repair damage to the retina. 176 patients took part in the study and they were randomly allocated to groups having pneumatic retinopexy or vitrectomy. The study found that pneumatic retinopexy offered better vision, less [vertical metamorphopsia](#) and fewer side effects compared to vitrectomy.

You can read the abstract of this article [here](#).

Deep learning and macular degeneration

Source: Ophthalmology

In a nutshell: Eye specialists usually assess the severity of age-related macular degeneration by looking at colour photographs of the back of the eye – a laborious and

[Type here]

time-consuming process. In this study Yifan Peng, from the National Institutes of Health in Maryland, led a team of researchers trying to see whether machine learning (the ability of computers to learn, via feedback, as they go along) could help. They developed a deep-learning model called DeepSeeNet to classify patients automatically using colour photographs of the back of the eye. The researchers found that DeepSeeNet was better than human specialists at detecting large drusen (tiny fat deposits under the retina) and pigmentary abnormalities but not as good at detecting late age-related macular degeneration.

You can read the abstract of this article [here](#).

Orthokeratology and short-sighted children

Source: Ophthalmology

In a nutshell: Orthokeratology is the fitting of a gas-permeable contact lens which is worn overnight. The lenses gently reshape the cornea so people can see clearly the following day when they take the lenses out. In this study Deborah K. VanderVeen, from Harvard Medical School, led a team of researchers looking into the use of orthokeratology to prevent short-sighted children's eyesight getting worse. The researchers reviewed the literature on this topic and found 13 articles that met their quality criteria. The study found that orthokeratology reduced axial elongation by around 50% over a two-year study period with younger-age groups and people with larger than average pupil size having a greater benefit. The researchers concluded that "orthokeratology may be effective in slowing myopic progression for children and adolescents, with a potentially greater effect when initiated at an earlier age (6-8 years). However, the researchers also concluded that safety was still a worry because of the risk of potentially-blinding microbial keratitis from contact-lens wear.

You can read the abstract of this article [here](#).

Anti-VEGF treatment and eye pressure

Source: Ophthalmology

In a nutshell: Some eye conditions cause new blood vessels to grow, or swell, under the macula. To counteract this people can sometime be injected with anti-vascular endothelial growth factor (Anti-VEGF) which stops blood vessels from growing. There's very rarely a 'free lunch,' in medicine though and these injections can raise people's eye pressure which can also cause problems. In this study Ambika Hoguet, from Ophthalmic Consultants of Boston (Mass. not Lincs.) led a team of researchers looking at how anti-VEGF injections affected ocular pressure. The researchers reviewed 41 studies into the issue and found that the injections led to an immediate, but short-lived rise in eye pressure. There was a chance of a long-term rise in eye pressure as well. The

[Type here]

researchers concluded that “even though treatment with glaucoma medications, performing anterior chamber paracentesis, or increasing the interval between injections may reduce the impact of transient IOP elevation, the clinical significance and associated risks of these interventions are unknown.

You can read the abstract of this article [here](#).

[EVO implantable lenses](#)

Source: Clinical Ophthalmology

In a nutshell: In this study Mark Packer, from MD Consulting in Colorado, reviewed studies on the safety and effectiveness of the EVO Implantable Collamer Lens. He looked at 67 pre-clinical studies and clinical reports and found that EVO lenses were safe and effective for a wide range of refractive errors. “High levels of postoperative uncorrected visual acuity, refractive predictability, and stability demonstrate the effectiveness of the EVO ICL.” The studies also showed that the EVO lens had become safer over time with reduced levels of anterior subcapsular cataract and pupillary block compared to earlier models.

You can read the abstract of this article [here](#).

[OCTA and diabetic retinopathy](#)

Source: Eye

In a nutshell: Diabetes can affect the blood vessels around the retina and in this study Ian A. Thompson, from Vanderbilt Eye Institute in Tennessee, led a team of researchers looking to see whether optical coherence tomography angiography (OCTA) could pick up tiny changes in the blood vessels before other techniques could. 37 eyes from 20 patients were included in the study. The patients were given the all clear using dilated funduscopic examination by a retina specialist but using OCTA 15 were found to have vascular abnormalities – microaneurysms. The patients with the microaneurysms had a greater density of blood vessels in their maculae than those without microaneurysms. The researchers concluded that “OCTA can detect microvascular changes not otherwise noted on dilated clinical examination. These pre-clinical findings may facilitate earlier intervention for improved glycaemic control and prevention of the onset of clinical retinopathy.”

[Type here]

A new way of classifying Meibomian gland dysfunction

Source: Eye

In a nutshell: The Meibomian gland lives in people's eyelids and produces an oil that helps prevent people's eyes drying out. In this study Matthieu Randon, from Quinze-Vingts National Ophthalmology hospital in Paris, led a team of researchers assessing whether in vivo confocal microscopy classification could be useful in the diagnosis of Meibomian gland dysfunction (MGD). The researchers studied 115 eyes from 115 people, 100 of whom had MGD and 15 of whom were unaffected. The researchers classified the participants into four types: type 0 for people unaffected, type 1 for people whose Meibomian gland was obstructed, type 2 for those whose gland was inflamed and type 4 for people whose gland had fibrosis. The researchers found that 29% of the MGD patients were type 1, 40% were type 2 and 31% were type 3. The patients in type 2 had a higher ocular-surface disease index than the other types and there was a strong correlation between the IVCN score and the meibography score. The researchers concluded that "by giving objective criteria, this IVCN classification may help advance the understanding of patients' symptoms and enhance treatment effectiveness in MGD."

You can read the abstract of this article [here](#).