

Highlights from this issue

doi:10.1136/bjophthalmol-2011-300636

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IOP in children under sedation

Oberacher-Velten *et al* investigated the effects of oral midazolam on intraocular pressure (IOP) in children (72 eyes of 36 children without glaucoma) requiring general anaesthesia by using a Perkins hand-held tonometer. Measurements of IOP were performed before, and 15 and 30 min after sedation with orally administered midazolam (1 mg/kg) and 5 and 15 min after induction of general anaesthesia. The mean IOP before sedation (11.2), at 15 min (10.9) and at 30 min (10.7) after administration of midazolam was not significantly different. However, IOP decline at 5 min (8.1) and 15 min (6.8) after induction of general anaesthesia was statistically significant. (*See page 1102*)

Inhibition of VEGF and restoration of retinal barrier malfunction

Deissler *et al* measured changes in trans-endothelial electrical resistance and expression of claudin-1 as a measure of cellular permeability and as an indicator of functional tight junctions respectively, in immortalised retinal endothelial cells (iBREC) in the absence or presence of ranibizumab or KRN951 (inhibitor of vascular endothelial growth factor (VEGF) receptors). Whereas VEGF165 decreased transendothelial electrical resistance and expression of claudin-1 in a concentration-dependent manner, long-term treatment of iBREC with basic fibroblast growth factor or/and insulin-like growth factor 1 did not. Complete reversal of these effects was achieved by prolonged treatment with ranibizumab and partly by exposure to KRN951. These findings indicate that VEGF165, but not insulin-like growth factor 1 or basic fibroblast growth factor, is mainly responsible for changes in cellular permeability observed in retinal endothelial cells, implying VEGF as a therapeutic target for diabetic macular oedema. (*See page 1151*)

Short-wavelength versus near-infrared fundus autofluorescence

Pilotto *et al* compared standard short-wavelength fundus autofluorescence (SW-FAF) and near-infrared-wavelength fundus

autofluorescence (NIR-FAF) for detecting age-related macular degeneration-related geographic atrophy (GA) in 25 consecutive patients (36 eyes). In the extrafoveal region, the total hypoautofluorescent (hypo-FAF) area was significantly wider with NIR-FAF than with SW-FAF (8.03 mm² vs 7.37 mm² respectively). In the foveal region, the total hypo-FAF area was smaller with NIR-FAF than with SW-FAF (0.19 mm² vs 0.42 mm² respectively). In nine cases (25%), the site of fixation was hypo-FAF on SW-FAF, but normal on NIR-FAF with preserved retinal sensitivity on microperimetry. The authors conclude that SW-FAF may overestimate GA in the foveal region and may underestimate GA in the extrafoveal region. (*See page 1140*)

Correlation between high resolution OCT and histopathology

Yamauchi *et al* investigated the relationship between the optical coherence tomography (OCT) images and histopathology in an iodoacetic acid (IAA)-induced model of photoreceptor degeneration in rabbits. In the OCT images of the control retinas, the inner segment/outer segment (IS/OS) was a clear, straight line; this correctly represented the histopathology. In the OCT images of retinas obtained from rabbits surviving for 1 day after IAA injection, the IS/OS was not observed, again in agreement with the histopathological observations. In rabbits surviving for 4 months after IAA injection, the inner photoreceptor segment was preserved, and the IS/OS was observed as a partially broken line in the OCT images. These results also corresponded to the observed histopathology. (*See page 1157*)

Primary intraocular lens implantation in children

Ram *et al* report retrospective results of paediatric cataract surgery with primary IOL implantation in 230 children (381 eyes) (Group A: polymethyl methacrylate (208), Group B: hydrophobic acrylic (144), Group C: silicone IOL (29)). The posterior capsule opacification rate (14–18%) was not different between the groups. Children

≤2 years had a significant myopic shift. The logMAR visual acuity was ≥0.3 in 62% of eyes with bilateral cataracts and 31% with unilateral cataract. The authors conclude that paediatric cataract surgery with primary IOL implantation is safe. Refractive changes and posterior capsule opacification are the main hurdles for achieving optimal visual outcome. (*See page 1086*)

Refractive error in Down's syndrome

Al-Bagdady *et al* studied the development and distribution of refractive error in 182 children with Down's syndrome. On average, children were hypermetropic, at all ages, with a wide variation in refractive errors. Prevalence of significant oblique astigmatism increased with age and was highly prevalent (45%) in teenage years. Longitudinally, no significant change in the spherical component of the refractive error was observed. The prevalence of oblique astigmatism increased with age and was high (45%) in the teenage years. The authors' observations provide further evidence of the failure of emmetropisation. Development of oblique astigmatism may be mechanical. (*See page 1091*)

Sustained elevation of intraocular pressure (IOP) after intravitreal injections of anti-VEGF agents

Good *et al* report the rate of IOP elevation in 215 eyes undergoing intravitreal injection with anti-VEGF agents for wet age-related macular degeneration. Data were analysed retrospectively with respect to frequency of injections, number of injections and changes in IOP. Six per cent (13) of the eyes had sustained IOP elevation requiring medical or laser interventions (bevacizumab, 9.9% (10/101); ranibizumab, 3.1% (3/96)). Patients with pre-existing glaucoma experienced higher rates of elevated IOP when compared with patients without pre-existing glaucoma (33% vs 3.1% respectively). The authors conclude that the incidence of sustained elevated IOP in patients receiving intravitreal anti-VEGF injections is significant with heightened risk in patients with pre-existing glaucoma. Prospective studies are needed to verify these findings. (*See page 1111*)