Journal Watch

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Vision science highlights from the world's leading journals of medicine and science

Big epithelial defects a big problem

Large central epithelial defects resulting from LASIK can lead to significant problems including diffuse lamellar keratitis, irregular astigmatism, flap microfolds, and delayed visual rehabilitation, report German researchers. The investigators reviewed a series of 1650 LASIK operations performed at a single centre, finding 22 eyes of 14 patients who developed severe central epithelial defects as a result of surgery. This included 20 eyes with diffuse lamellar keratitis (DLK), 17 eyes with irregular astigmatism, and 12 with microfolds. Eight cases involved both eyes. Nearly all of the eyes lost some degree of best-corrected visual acuity in the postoperative period. Visual acuity did improve slowly, and no eye lost more than one line of vision at the one-year follow-up point. Two-thirds of the affected eyes had moderate to severe dry-eye symptoms before surgery.

JCRS, A. Mirshahi et al., 'Clinical course of severe central epithelial defects in laser in situ keratomileusis', August 2004;Vol. 30, Issue 8, 1636-1641.

Blocking growth factor enhances graft survival

A growth factor called vascular endothelial growth factor receptor-3 (VEGFR-3) plays a key role in corneal transplant rejection, say Harvard scientists. Moreover, animal studies show that blocking the growth factor enhances the survival of corneal grafts. The finding is an important development towards understanding the immune system pathway linking the eye to the rest of the body. The team was able to show that VEGFR-3 was responsible for mobilising antigen-presenting cells to move into the lymphatic system. Blocking VEGFR-3 by using immunoglobulin blocked the antigen-presenting cells and prevented them from entering the lymphatic system, blocking the immune response. The researchers believe the findings may extend well beyond ophthalmology to other fields, particular organ transplantation and cancer therapy.

Nature Medicine, R. Dana et al., 'Vascular endothelial growth factor receptor-3 mediates induction of corneal alloimmunity', August 2004; 10, 813 – 815.

Tumour patients see clearly now

Patients undergoing plaque radiation therapy for treatment of ocular tumours can continue to see during treatment, thanks to new clear lead glasses. Researchers at the Manhattan Eye and Ear Infirmary tested the glasses in a series of patients undergoing treatment with palladium 103 plaque radiotherapy. Until now patients have been required to wear opaque lead patches during treatment. The glasses are as effective as the patch in blocking radiation from escaping into the environment. Patients appreciated the ability to feed themselves and otherwise function at home with greater freedom.

American Journal of Ophthalmology, PT Finger et al., 'Radiation-blocking glasses allow vision during ophthalmic plaque radiation therapy', June, 2004;Vol. 137, Issue 6, 1149-1151.

AMD gene discovered

Genetics researchers report the identification of defects in a single gene that underlie a hereditary form of age-related macular degeneration. The researchers recruited 402 people with AMD and 429 healthy volunteers. They then examined the patients' DNA, looking for variations in genes that code for fibulins, proteins previously implicated in AMD. Seven of the 402 AMD patients each had a different change in the FBLN5 gene that was not found in the healthy control group. Six of these seven changes altered an amino acid in the fibulin 5 protein. Although the genetic mutations affect only about two percent of patients with AMD, the researchers believe that the findings offer important insights towards understanding the pathogenesis of AMD.

NEJM, EM Stone et al. 'Missense Variations in the Fibulin 5 Gene and Age-Related Macular Degeneration', Jul 22, 2004; 351:346-353.

Perimetrypromising for PK patients

Frequency-doubling perimetry may prove useful in postoperative glaucoma screening of penetrating keratoplasty patients. German researchers used the technique to assess postoperative corneal topographic changes in 36 penetrating keratoplasty patients.

Patients with pre-existing glaucoma or any postoperative intraocular pressure elevation were excluded. Field-testing was equally effective in PK patients and controls. Post-operative corneal topographic changes including keratometric astigmatism, topographic astigmatism, spherical equivalent, and central corneal thickness did not appear to interfere with perimetry testing.

Cornea, NX Nguyen et al., 'Frequencydoubling perimetry in patients following penetrating keratoplasty', 2004; 23(5):433-8.