New technique captures high-res images of full retina

December 1 2008

Researchers used a new imaging technique to take high quality color photographs of the clinical stages of ocular inflammation in mice, and the technology could help in the monitoring and treatment of diseases of the eye that may cause blindness.

The study, "The Clinical Time-Course of Experimental Autoimmune Uveoretinitis Using Topical Endoscopic Fundal Imaging with Histologic and Cellular Infiltrate Correlation," was published in the Association for Research in Vision and Ophthalmology journal *Investigative Ophthalmology and Visual Science* (*Invest. Ophthalmol. Vis. Sci.* 2008 49: 5458-5465).

It featured the use of Topical Endoscopic Fundal Imaging (TEFI), a technique that uses an endoscope with parallel illumination and observation channels connected to a digital camera. TEFI was developed by Michel Paques, et al (see *Invest. Ophthalmol. Vis. Sci.* 2007 48: 2769-2774).

David Copland, BSc, MSc, and the team from the University of Bristol's Academic Unit of Ophthalmology monitored changes in the mice retina over time without distress to the animals or the need for anesthesia.

"TEFI enhances our monitoring of clinical disease in a rapid and non-invasive fashion," the researchers reported. "It will aid in the design of experimental protocols according to clinical observations."

The study focused on a condition similar to human posterior uveitis, which can be difficult to monitor using present techniques. TEFI allowed the researchers to see changes to the eye that were previously undetectable.

The researchers wrote that TEFI can help monitor the effects of new ocular therapies, as well as invasive procedures such as intravitreal or sub-retinal injections.

Though the method will be a helpful resource to improving detection, Copland's team said the technology should be used in conjunction with existing techniques for monitoring the progression of eye diseases.

"Combined TEFI and histological methods enable the observation of clinical features and severity of disease, but information regarding the dynamics, phenotype, function and quantity of cellular traffic through the eye is only provided through detailed analysis of cell populations present in the eye at various stages of disease progression."

Source: Association for Research in Vision and Ophthalmology