News in Review

A Look at Today's Ideas and Trends

Glaucoma Report

Glaucoma Patients Take IOP Monitoring Home

Scientists at Greifswald University Hospital in Germany have developed a telemedicine program for glaucoma, utilizing a home-based tonometer, and the program has been used by health insurance company Techniker Krankenkasse since June 1. Patients hold a tonometer with an electronic pressure sensor to the surface of the eye to measure intraocular pressure, and the data are transmitted via modem to an electronic medical record, which can be accessed by the patient's ophthalmologist, who can then customize medications to the patient's needs.

Plans call for Techniker Krankenkasse patients to be seen once by an ophthalmologist at Greifswald University Hospital, and then to receive a small suitcase with a tonometer and modem. Each patient receives an individual schedule for IOP measurements and also measures arterial blood pressure regularly. Using these parameters, ocular perfusion pressure (OPP) is calculated automatically. A number of epidemiologic studies have shown that OPP is a risk factor for glaucoma and that it may be a more appropriate predictor of progression than arterial blood pressure or IOP alone, according to Frank Tost, MD, vice director of ophthalmology at Greifswald University Hospital. Once a month, a diurnal profile of IOP and arterial blood pressure is created with seven measurements between 6 a.m. and midnight.

"Self-measurements at home represent a feasible method to record and detect intraday IOP fluctuations and explore the influence of blood pressure on glaucoma progression. The result is that we can adapt therapy options to a patient's individual situation," Dr. Tost said.

How does the home-based monitoring by patients compare to assessments done in an ophthalmology office?

In a study of 25 patients published in the German journal *Klinische Monatsblätter für Augenheilkunde*,[1] Dr. Tost and fellow researchers compared IOP measurements obtained with the home-based telemedical device with those obtained in eye specialists' practices. The diurnal profile showed more frequent circadian IOP variation with the home-based tonometer. The IOP values were an average of 18.9 mmHg for right eyes and 18.2 mmHg for left eyes compared with 16.3 mmHg for both eyes as measured during ambulatory care.

"We've found that there is a low incidence of measuring errors with the home-based self-tonometry, and they don't have an effect on the overall time pattern and course of IOP values," Dr. Tost said.

—Barbara Boughton

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1 *Klin Monatsbl Augenheilkd* 2008;225:1–6.

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Ed: Validation of the tonometer has yet to be published.

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