

Triggerfish System: Glaucoma Monitoring System

I. INTRODUCCION

The Triggerfish system is a non-invasive continuous monitoring system of intraocular pressure that does not interfere with eye sight. Triggerfish was created by the Swiss company SENSIMED. Last year the system received safety approval in Europe and it is expected to have U.S. Food and Drug Administration Approval by late 2011.

II. GLAUCOMA

Glaucoma is a progressive and irreversible asymptomatic disease that causes deterioration of the optic nerve. High levels of liquids in the eye due to accumulation of fluids cause a change in cornea diameter. This then leads to an increase in intraocular pressure (IOP). Frequent changes in IOP over the span of a day and high peaks in IOP levels at night are contributors to glaucoma disease. Four percent of the population is affected by glaucoma disease and the main age group is those forty years and older.

III. CURRENT GLAUCOMA MONITORING SYSTEMS

Current monitoring systems on the market in the United States measure static IOP by taking single snapshots in time. Currently eye pressure is only monitored at the normal yearly eye exams during the day when IOP levels are low. Patients that are at risk for glaucoma or have glaucoma go to sleep labs where they are monitored during the night, when IOP peaks. This monitoring system is expensive, cumbersome, and the results are not as accurate. The current systems require frequent punctual measurements in order to check pressure peaks, which affects the IOP.

IV. TRIGGERFISH SYSTEM

A. Components

Triggerfish system is made up of a MEMS sensor, Telemetry microprocessor, antenna, receiver or recorder, and software. The sensor and the microprocessor are embedded in the outer edge of the soft, hydrophilic, silicon lens; similar to contact lenses worn to improve vision. The sensor consists of a strain gauge that measures changes in the diameter of the cornea due to increased IOP. The Microprocessor processes level changes and sends information to the receiver or recorder. Taped around the eye is the circular antenna, which sends energy to the sensor and receives measurement information. The antenna is attached to a portable recorder or receiver with a thin data cable. Worn around the neck and battery powered, the receiver stores measured information and wirelessly uploads information. Ophthalmologists use software to receive information in order to visualize the IOP profile.

B. Benefits

The Triggerfish system allows a better understanding of pressure change since it measures IOP levels throughout the day and night up to twenty-four hours. Data received enables ophthalmologists to alter drug regiments in order to compensate with changing pressure levels as well as increases early diagnosis and treatment accuracy.

III. RESOURCES

Gravitz, Lauren. "Glaucoma Test in a Contact Lens." Technology Review 31 March 2010.

MEMS Investor Journal. "APPLYING MEMS TECHNOLOGY TO THE DIAGNOSIS OF GLAUCOMA." MEMS Investor Journal (2009): 1-6.

Sensimed AG. SENSIMED. 12 April 2010
<<http://www.sensimed.ch/index.htm>>.