Doheny Researchers to Test Next-Generation Retinal Implant

Researchers from the Doheny Eye Institute at the University of Southern California (USC) have received US Food and Drug Administration (FDA) approval to take the next step in their investigation of an implanted artificial retina.

A USC news release said the study is evaluating the use of the artificial retina implant intended to help restore vision to patients made blind as a result of retinitis pigmentosa (RP). Doheny investigators hope that, thanks to this device, patients with RP and age-related macular degeneration (AMD) will be able to regain some vision

Mark Humayun, MD, PhD, professor of ophthalmology at the Doheny Eye Institute, said the FDA recently approved an Investigational Device Exemption to conduct a clinical study of the new device—known as the Argus II Retinal Prosthesis System.

According to Dr. Humayan, the implantable technology is a collaborative effort between the Doheny Eye Institute, USC, and Second Sight Medical Products (Sylmar, California), manufacturer of the implant. The Argus II is the second generation of an electronic retinal implant designed for the treatment of blindness due to RP. The Argus device is essentially designed to take the place of the photoreceptors that have degenerated in RP patients.

"The first phase of our implant work began in 2002," said Dr. Humayun. "We have successfully implanted six patients in the trial and we have found that the devices are indeed electrically conducting and can be used by patients to detect light or even to distinguish between objects such as a cup or plate."

While the first generation of implants contained 16 electrodes laid out on an array, the Argus II is designed with 60 electrodes, which is intended to allow for higher resolution images. The new device is also approximately one quarter the size of the original, reducing surgery and recovery times.

The device, ultimately, may be used for the millions of people suffering from AMD. In fact, Dr. Humayun said, there are 25 million people around the world, including 6 million in the United States alone, who have been blinded, or are severely visually impaired, due to diseases like RP and AMD.

By 2020, that figure is expected to double, creating a vision-loss epidemic.

"Perhaps what we're most excited about in this next study is similar to the first-generation Second Sight device," Dr. Humayan said. "We will be able to test the new device with patients at their homes, churches, schools and similar locations. The importance of this work is going to be reflected in how well this helps them regain some of their lost vision."

The current study will include patients aed >50 years with RP or AMD and who have had previous functional vision. ■

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