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Treating Stargardt's disease with non-invasive electrical stimulation (NI-ES)

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Statement of the Problem: Stargardt's disease is the predominant form of all of the juvenile-onset macular dystrophies. Inherited as an autosomal recessive trait, it is a severe form of a bilateral progressive eye disease affecting the macula and the retina surrounding it. Prevalence is estimated to be 1 per 8-10,000. There is no treatment for Stargardt's disease.

Purpose: The purpose of this study is to demonstrate that transpalpebral non-invasive electrical stimulation (NI-ES) is beneficial in treating Stargardt's disease.

Methodology & Results: Four patients underwent one treatment session of ten minutes to both the eyes daily for three consecutive days with the eye stim device. At the end of 3 days of treatment, the mean distance ETDRS VA (Visual Acuity) improved markedly (mean+20 letters), with 63% improving more than 11 ETDRS letters and 50% improving more than 15 ETDRS letters.

Conclusion & Significance: The positive effect of the electrical stimulation on VA occurred quickly, after one session, demonstrates that NI-ES is beneficial for treating Stargardt's Disease. It is non-invasive and was well tolerated with no side effects reported. The positive effect continues with monthly sessions. Gene therapy and stem cell therapy treatments so far have not shown comparable resultant gain in useful vision, are much more invasive, and especially stem cell therapy has resulted in cataract formation and serious adverse events. Based on the very promising results with NI-ES, its investigation in a larger group of patients with Stargardt's disease is indicated and gives hope of a new therapeutic option.

Recent Publications

1. Klein R et al. (2007) Fifteen-year cumulative incidence of age-related macular degeneration: the Beaver Dam eye study. *Ophthalmology* 114(2):253-262.
2. Wang J et al. (2007) Ten-year incidence and progression of age-related maculopathy: the Blue Mountains Eye Study. *Ophthalmology* 114(1):92-98.
3. Shinoda K et al. (2008) Transcutaneous electrical retinal stimulation therapy for age-related macular degeneration. *Open Ophthalmol Journal* 2:132-136.
4. Anastassiou G et al. (2013) Transpalpebral electrotherapy for dry age-related macular degeneration (AMD): an exploratory trial. *Restorative Neurology Neuroscience* 31(5):571-578.
5. Korb C A et al. (2014) Prevalence of age-related macular degeneration in a large European cohort: results from the population-based Gutenberg Health Study. *Graefes Archive for Clinical and Experimental Ophthalmology*. 252(9):1403-1411.

Biography

Wendy Strouse Watt graduated from Pennsylvania College of Optometry and pursued her Master's Degree work through Nova Southeastern University College of Optometry's Clinical Vision Research Graduate Program. She is currently involved in private practice at DuBois Vision Clinic, Pennsylvania (USA). Her research work deals with the treatment for dry macular degeneration. Her passion is to get the treatment to the people in need. Over the years, she has fine-tuned the protocol, the methodology and process of non-invasive electrical stimulation (NI-ES) of the retina.