Treatment of Macular Degeneration with Microcurrent Stimulation

By Gene Bruno, OMD, LAc, FNAAOM

Introduction

I began using microcurrent stimulation in addition to using needles to treat Age-Related Macular Degeneration (AMD) in 1999. It was my experience, that although acupuncture could be very effective for treating AMD, frequent treatment was needed in order to help maintain any progress that was gained. One of the difficulties that was apparent in the patient needing 3 to 4 treatments a week for the rest of their lives was the financial obligation of such long term care. The development of a microcurrent device that allows for self-treatment by the patient under the supervision of an acupuncturist makes it possible to treat patients in a more practical way.

Abstract

In the process leading to vision, light enters the eye through the cornea, and then passes through the pupil (in the center of the iris) and the lens, which focuses it onto the retina. The lens changes its shape to allow light to be focused sharply on the retina. Directly behind the lens and on the retina is a depressed spot called the macula lutea (or fovea), which lies at the center of the visual field.

Age-related Macular Degeneration (AMD) is the major cause of blindness in the United States in persons over 55 years of age.[1] AMD damages the retinal tissue in the macular area causing fine pigmentary stippling, retinal pigment epithelium (RPE) changes, and the development of drusen.[2] Drusen are the precipitation of cellular waste materials in the RPE. Reports estimate that over 18 million adults in the United States currently suffer from AMD. As a comparison, about 9 to 10 million suffer from cancer. Some reports estimate that by 2010 over 30 million adults in the US will suffer from AMD.[3]

Traditional therapies offer no treatment for macular degeneration. Although recent research indicates some benefit from the use of vitamin and mineral supplements, the use of antioxidants may slow but not stop the progression of the disease. Recent treatment of acupuncture points with the use of microcurrent stimulation has shown promising and even remarkable results in stopping and reversing the results of the effects of macular degeneration. The results of the clinical studies described below indicate that microcurrent stimulation of acupuncture points can have a positive effect on the vision of patients with AMD. It is likely that this is due to the effect that microcurrent has on enhancing the cellular ATP synthesizing capabilities, specifically in the retina, and thus provide a means to improve visual acuity for AMD patients. Microcurrent stimulation of acupuncture points is currently the only viable option for those suffering from AMD. The purpose of this paper is to give a background summary of AMD and to then present a summary of clinical cases of the first 42 patients treated at our clinic.

Key Words

- AMD – Age Related Macular Degeneration (Also abbreviated as ARMD).
- ATP – Adenosine triphosphate. The molecule is composed of a sugar (ribose), a base (adenine) and a string of 3 phosphate groups. ATP is an active energy transport system.
- Drusen – Drusen is composed of 11 known proteins. It looks like a yellowish-white fatty substance, but in fact is not fat. It appears as small spots on the macula or elsewhere on the retina.
- Lutein – Lutein and Zeaxanthin are the only carotenoid antioxidants found in the eye.
- Macula – The Macular Lutea is a small yellowish area lying slightly behind the center of the retina that constitutes the region of maximum visual acuity.
- Rods, chiefly responsible for night vision, respond to varying degrees of light and dark but not to color.
- Cones respond to light and dark as well as to color or different wavelengths of light, and operate mainly in daytime. Only cones are present in the fovea.

Rationale

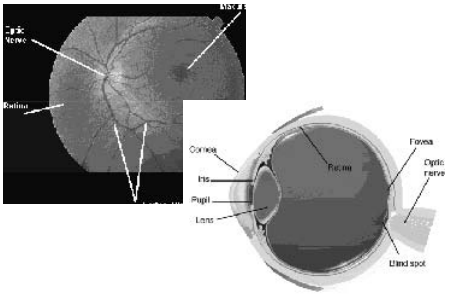
It is possible that ATP (adenosine triphosphate) metabolism is one of the significant keys that is crucial in the treatment of AMD. ATP Synthase, a.k.a. ATPase, is an enzyme that catalyzes the synthesis of ATP. A genetic defect in the ATPase 6 gene has been implicated in the disease Retinitis Pigmentosa (RP). RP has similarities to AMD, not the least of which is that RP is a type of progressive retinal degeneration.[4, 5]

Stargardt's disease (STGD), also known as fundus flavimaculatus (FFM), is an autosomal recessive retinal disorder characterized by a juvenile-onset macular dystrophy, alterations of the peripheral retina, and subretinal deposition of lipofuscin-like material. A gene encoding an ATP-binding cassette (ABC) transporter was mapped to the 2-cM (centiMorgan) interval at 1p13-p21 previously shown by linkage analysis to harbor the STGD gene. This gene, ABCR, is expressed exclusively and at high levels in the retina, in rod but not cone photoreceptors, as detected by in situ hybridization. Mutational analysis of ABCR in STGD families revealed a total of 19 different mutations including homozygous mutations in two families with consanguineous parentage. These data indicate that ABCR is the causal gene of STGD/FFM.[6]

ATP dysfunction seems to be the common link between several different genetically related forms of retinal degeneration. Based on analysis of preliminary studies, it is likely that AMD is related genetically to the reduced production of ATP in the cells of the retina. Enhancement of intracellular ATP concentrations is a known effect of microcurrent stimulation.[7] Cheng's study showed that protein synthesis is enhanced by microcurrent stimulation.[8] Cheng's research also showed that microcurrent enhanced the cell's ability to absorb nutrients and to produce ATP. Currents in the range of 500 microamps were shown to increase ATP concentrations up to 500%.[9] Establishing an increased electrical charge on the cells decreases electrical resistance of the

Schwann cell sheaths and a significant amount of information is processed and transmitted, not only via the traditional waves of depolarization of the cell membrane, but also via an analog current carried by the myelin sheaths.[10] It is also important to note that Cheng's research showed that electrical stimulation above 1000 micro amps (1 milli-amp) decreased protein synthesis as much as 50%. Additionally, above 1 milli-amp, ATP production decreases below normal values.

Normal ATP concentrations are essential for restoration of visual purple and rhodopsin after light reception and transmission has taken place. Normal concentrations of ATP are also critical for neurological re-polarization, normal cellular reproduction, normal cellular maintenance and cellular waste management.



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Research and Clinical Studies

August Reader, MD, a neuro-retinologist, and Grace Halloran, PhD, completed a double blind study that indicated positive results from microcurrent stimulation for patients with Age-related Macular Degeneration, Retinitis Pigmentosa, Stargardt's disease, and other retinal diseases.[11] Damon P. Miller, M.D., has published the clinical results of the first 120 patients he treated for AMD using microcurrent therapy that showed significant improvement.[12] A preliminary report on the treatment of AMD using auricular acupuncture and electrical acupuncture was issued by Alston Lundgren, MD. This study involved only 10 individuals, but also showed significant improvement for most patients. In each of these studies or clinical cases, all microcurrent was delivered to the retina via acupuncture points.

Methods

At our clinic over a one-year period 42 patients were trained in the use of self-treatment with microcurrent stimulation of acupuncture points for the treatment of AMD. Treatment involved the use of a microcurrent stimulator to treat acupuncture points surrounding the eyes. The microstimulator that was used was the MicroStim 100i®. The stimulator was used to deliver micro-current at 250 to 700 microamps for five minutes. Patients were also educated in the use of nutritional supplements considered supportive for ocular conditions.

Patient Orientation

Many of the patients seen in our clinic do not have much understanding of what Age Related Macular Degeneration is, nor do they have much support, if any, from their ophthalmologist. Their primary support comes from their family, and these family members are generally not well informed about AMD. One of the contributing factors is that since western medicine has no treatment for AMD, they offer little advice or support to patients. As part of treatment, it is important to establish good communications with patients and to give them a basic understanding of AMD. Since most patients are unfamiliar with acupuncture and electrical acupuncture treatment methods, patients need to be clearly informed.

Visual acuity and visual function tests were done before treatment and every 3 months during treatment. After the first year, these tests are done every six months. Patients' medical records are reviewed before the initial treatment.

Most patients are familiar with different types of vitamin regimens that are recommended in the treatment of AMD. Since a recent NIH funded study showed that specific vitamins and nutrients can support vision for AMD, patients are encouraged by ophthalmologists to take them. These are non-prescription nutrients. The problem is that they are generally of a lower quality than is needed for optimal health as it relates to the eye. Part of the treatment protocol in our clinic is to review the patient's vitamin and supplement therapies, to explain the importance of proper nutrient support of the eyes, and make proper recommendations.

Each patient, at their first visit, is given an explanation of the microcurrent device they will be using and each patient is "walked through" the treatment. For example, it is explained to the patient that the device is a Direct Current (DC) device, but they will feel no discomfort while using the microcurrent stimulator. They are also told the treatment itself lasts only five (5) minutes. In every case, our clinic requires another family member be present with the patient and be trained in the use of the device, and the treatment protocol.

Patient evaluation – Each patient has been previously examined and diagnosed by an ophthalmologist or retinal ophthalmologist. A visual function test (VF-14) that was developed at John Hopkins University is done before treatment. A general medical history questionnaire is completed by the patient. A specific medical history is taken of the visual condition of the patient and any previous treatment they received for their eyes.

Results

Forty-two (42) patients came to our clinic seeking treatment for AMD. These patients used microcurrent stimulation to treat acupuncture points near both eyes. The average age of patients was 77.6 years. Treatment was 2 to 3 times per day, every day. Visual acuity and VF-14 tests were done every three months. Of these initial forty-two (42) patients, (after six months of treatment), 36 patients (85.7%) showed improvement in visual acuity of 2 lines or more. Three (3) patients (7.1%) showed improvement of 1line of visual acuity. Two (2) patients (4.8%) showed no improvement. And one (1) patient (2.4%) lost one line of visual acuity. The average change in visual acuity for all patients was +2.88 lines. VF-14 test results showed a positive change of an average of 35 points on a point scale of 0 to 100 points.

Conclusion

It is important to note that macular degeneration is nearing epidemic type numbers in the US. Research and clinical studies validate the effectiveness of using microcurrent stimulation to treat macular degeneration. AMD and other similar retinal diseases are otherwise untreatable by any means, making electrical acupuncture the only current viable option for those suffering from these devastating diseases. Dr. Joel Rossen developed the original protocol

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for treating RP and AMD, and Dr. Grace Halloran and Dr. Damon Miller pioneered the early clinical studies. I want to thank them for their work.

Note: A workshop on the Treatment of Macular Degeneration with Microcurrent Stimulation will be held in Chicago on September 18, 2005. The contact number for the Illinois State Acupuncture Association is 866-245-0144.

Gene Bruno is the past president of the AAOM and currently a Director. His practice is located in Salem, Oregon. He teaches classes on the treatment of Macular Degeneration and will be conducting a workshop on this topic at the Illinois Conference in Chicago in September.

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