

# An Acupuncture Protocol For Treatment Of Age-Related Macular Degeneration: A Second Report

Alston C. Lundgren, MD

## ABSTRACT

**Background** Age-related macular degeneration (AMD) is the major cause of vision loss in older people. An earlier publication reported preliminary data. This follow-up report confirms earlier results and expands treatment parameters.

**Objectives** To evaluate the efficacy and safety of acupuncture to treat AMD and to explore treatment parameters.

**Design, Setting, and Patients** Case series of 108 patients (56 women/52 men, median age 76.1 years [range 47-96 years]), seen at a single private practice in New Mexico (US) in 2003-2004. All patients were diagnosed by their ophthalmologist as having macular degeneration. Thirty-two percent (32%) of eyes had wet AMD, 50% dry, and 18% were not specified.

**Intervention** An acupuncture approach combining periorbital electrical stimulation, ear acupuncture, and a French Energetic technique was applied to each patient.

**Main Outcome Measures** Increase in visual acuity measured by Early Detection and Treatment of Diabetic Retinopathy Studies (EDTRS) charts.

**Results** Overall, 69% of patients improved in distant vision and 69% improved in near vision. Patients with both wet and dry forms of AMD benefited equally. Half of patients had subjective vision improvement, 33% of patients gained more than 2 lines on EDTRS charts, 20% reported lessening or disappearance of scotomas, 7% of patients noted improved color vision. The only complication was an occasional ecchymosis and recovery was uneventful.

**Conclusion** Visual acuity in AMD may be improved by acupuncture. Further research is necessary to optimize the protocol and elucidate the mechanism of action.

## KEY WORDS

Acupuncture, Auriculotherapy, Age-Related Macular Degeneration, Percutaneous Electric Stimulation of Cranial Nerve, Visual Impairment

## INTRODUCTION

An acupuncture protocol for improving visual acuity in AMD was earlier reported in *Medical Acupuncture*.<sup>1</sup> This second report expands the patient population treated, confirms initial results, and demonstrates the durability of benefit. It makes more robust the conclusion that vision loss through macular degeneration disease may be reduced and possibly reversed through medical acupuncture. It addresses questions about durability of treatment and parameters affecting treatment.

## BACKGROUND

Age-related macular degeneration (AMD) is the most common cause of severe central vision loss in people older than 50 years.<sup>2</sup> The etiology and pathogenesis of AMD are unknown, although multiple mechanisms have been identified and are likely involved.<sup>3</sup> Recently, there has been focus on inflammation because the risk factors for AMD seem to closely resemble the risk factors for coronary artery disease, cerebrovascular accident, and Alzheimer disease.<sup>4</sup>

There are 2 subtypes: dry and wet (neovascular). The dry type is by far the most common and has no proven treatment except high-dose supplementation of vitamins C, E, beta carotene, and zinc.<sup>5</sup> Wet or neovascular AMD is less common but can lead to rapid and severe visual losses. Laser photocoagulation has proved to be of benefit by slowing progression in 25% of neovascular AMD with well-defined choroidal neovascularization (classical). Treatment itself, however, causes an immediate loss of about 3 lines in visual acuity.<sup>6,7</sup>

Over the last few years, interest has focused on photodynamic therapy through intravenous injection of verteporfin with application of cold laser. This approach yields better results than thermal photocoagulation.<sup>8</sup> However, it only benefits a fraction of those patients with neovascular AMD.

Most recently, there has been a report on pegaptanib, a specific antagonist of vascular endothelial growth factor.<sup>9</sup> Intravitreal injection

of pegaptanib every 6 weeks reduced the vision loss on all classes of neovascular AMD tested. However, although some patients gained visual acuity, overall they experienced a loss of vision.

In my practice, I have used a combination of acupuncture and auriculotherapy points, which appear to significantly improve the visual acuity of AMD patients. My protocol is referred to as "Acupuncture AMD Protocol."

## METHODS

### Patient Selection

One hundred eight consecutive patients with ophthalmologist-diagnosed macular degeneration were treated with the Acupuncture AMD Protocol over an 18-month period between January 2003 and September 2004. The overwhelming majority had consulted a retinologist. All patients gave informed consent after discussion of the risks and unknown benefits of this protocol. The group consisted of 52 men and 56 women, ranging in age from 47 to 96 years, with average age 76.1 years. All were white, Hispanic, or Native American.

Initial, best-corrected visual acuity ranged from 20/20 - 2 to 20/1000 + 2. Sixty-five eyes were identified as having wet AMD, 104 eyes were dry AMD, and for the remaining 38 eyes, patients reported that their ophthalmologist had diagnosed AMD but the patient could not recall the type. Most of the eyes labeled as wet AMD had undergone either laser thermal photocoagulation or photodynamic therapy.

### Visual Acuity Measurements

Initially and before every 2nd treatment, visual acuity was checked, using both near and distant EDTRS charts (Precision Vision, La Salle, IL). The initial evaluation included color vision evaluation using H.R.R. (Hardy, Rand, and Rittler) Pseudoisochromatic Plates (Richmond Products, Boca Raton, FL). Patients were given Amsler grids for self-monitoring of their visual status.

**Acupuncture Treatment**

Three acupuncture techniques that were combined in this protocol:

1. Auricular acupuncture to indirectly stimulate appropriate parts of the brain
2. Neuro-anatomical acupuncture to directly stimulate the retina and periorbital tissue
3. French Energetic Liver cerebral circulation stimulation to enhance eye function

**Acupuncture Technique**

First, auricular acupuncture was applied.<sup>10,11</sup> Auricular medicine evaluation consistently determined that corpus callosum and adrenal sites, Nogier phases 2 and 3, required attention. For this series of patients, the parasympathetic control point (ear Shen Men) and Nogier cranial nerve II sites, phases 2 and 3, were added. All 7 points were always treated unless there was an indwelling needle from a previous treatment or auricular medicine evaluation indicated the point needed no stimulation (Figure 1).

The ear points were usually quite small, 1/2 mm in diameter, and were identified using a NET 2000 device (Auri Stim, Denver, CO). When the most electrically active point in the expected area was located, a gold ASP semipermanent needle was placed for chronic stimulation of that point (Bios Overseas, Hidalgo, TX).

The surface of the ear was not cleaned before needle placement unless there was obvious gross contamination. Needles were not placed in suspected infections or malignancies. The ASP needles stayed in place until they fell out, which ranged from 2 days to a month or more if the patient was careful with the ear.

The 2nd acupuncture technique made use of neuro-anatomical concepts.<sup>12</sup> A 0.20 mm x 15 mm needle (Helio Acupuncture and Medical Supplies) was placed under the globe at the notch on the medial inferior orbital rim. Three 0.12 x 30 mm needles were placed in the other 3 quadrants of the orbital rim at notches medially and laterally on the superior orbital rim and on the inferior lateral rim (Qi Hou).

Finally, a French Energetics Liver cerebral circuit was installed.<sup>13</sup> A 0.20 x 30 mm needle was placed to stimulate LR 3 in the great toe webspace, and a 0.20 x 30 mm needle was placed to stimulate LR 8, posterior to the distal femur just above the knee. Completing the circuit, a 0.20 x 15 mm needle was placed at LR 14 in the 5th intercostal space at the mid-clavicular line. (Care was taken to needle obliquely to avoid pneumothorax.) The circuit return was through another 0.20 x 15 mm

needle to BL 60, posterior to the lateral malleolus.

The logic for placing the Liver cerebral circuit derived from Chinese reports that Liver meridian points influenced the eye. Personal anecdotal experience supported the Chinese reports in other eye conditions. Also, the Liver cerebral circuit contacts the anterior parasympathetic plexus.<sup>14</sup>

**Electrical Stimulation**

Next, electrical stimulation was applied using Pantheon Electric Stimulators. (Pantheon Research, Venice, CA). The pattern used was:

1. Negative lead to LR 3 and positive lead to ipsilateral LR 8
2. Negative lead to LR 14 and positive to Qi Hou
3. Negative lead to 1 of the medial inferior orbital needles and positive to the other
4. Negative lead to 1 supraorbital needle and positive to the other, alternating polarity.

In the original series, stimulation was 2 Hz. Subsequently, all patients appeared to respond to stimulation with frequencies ranging from 2 to 21,000 Hz. We have not yet been able to determine the optimum frequency.

**Treatment Frequency and Duration**

The cumulative number of treatments determined how much improvement a patient received. We recommend weekly treatments. Patients did not benefit from more than 3 treatments per week. Gaps of up to 4 months between treatments had no effect on the amount of improvement achieved.

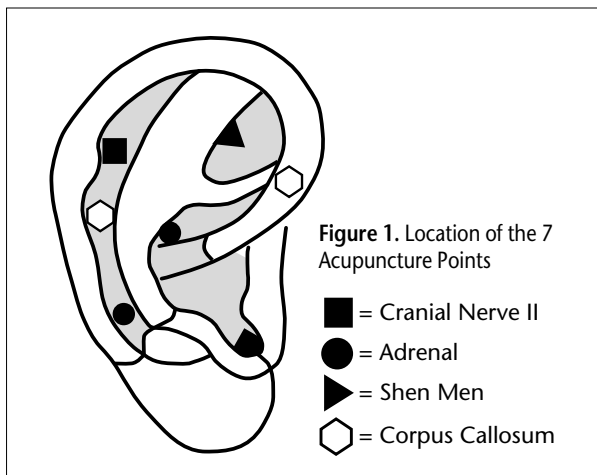
Each treatment session lasted 25-35 minutes. The intensity was such that a tapping, buzzing, or mild discomfort was felt at each circuit.

In this series, most patients were not treated until they maximized improvement. They left treatment for a variety of reasons, including slow subjective progress, unrelated illness, economic hardship, and difficulty to access treatment.

**RESULTS**

One hundred eight consecutive patients with ophthalmologist-diagnosed macular degeneration disease were treated, totaling 207 affected eyes, from January 2003 through September 2004. Patients were treated until they either dropped out or showed no further gains in 2 consecutive vision tests.

Table 1 shows the results by AMD category. Letters gained are net of letters lost by other patients and represent overall results.



**Figure 1.** Location of the 7 Acupuncture Points

- = Cranial Nerve II
- = Adrenal
- ▲ = Shen Men
- ◻ = Corpus Callosum

**Table 1.** Near and Distant Vision

	No. of Eyes	No. of Treatments	No. of Letters Gained	No. of Letters/ Gained Treatment
<b>Near Vision</b>				
Wet AMD	65	447	342	0.77
Dry AMD	104	593	486	0.82
Not specified	38	224	57	0.25
<b>Total</b>	<b>207</b>	<b>1264</b>	<b>889</b>	<b>0.70</b>
<b>Distant Vision</b>				
Wet AMD	65	447	299	0.69
Dry AMD	104	593	504	0.85
Not specified	38	224	106	0.47
<b>Total</b>	<b>207</b>	<b>1264</b>	<b>909</b>	<b>0.72</b>

AMD indicates age-related macular degeneration.

### Other Findings

1. Benefits per treatment apparently increased with the length of time of stimulation and seemed to maximize at 25-35 minutes.
2. Duration of improvement was substantial; visual acuity improvements did not seem to deteriorate for a year-and-a-half.
3. Anecdotally, 7% of patients reported that color vision improved; H.R.R. Pseudoisochromatic testing documented that phenomenon in several patients.
4. Several subjective improvements were also reported:

Patients said they did not require as much contrast to read. They also reported that they were able to see better in dim lighting or could drive better at night.

Patients reported that the Amsler grid showed less distortion than pretreatment. They testified that straight objects no longer had wavy or distorted edges.

Scotomas became smaller and decreased in size until they disappeared.

Consistently, patients reported that the "film over vision" or "fog" through which they viewed faces and distant objects cleared.

### Complications

Ecchymosis around the eye occurred 1 treatment in 10. All ecchymoses responded spontaneously. Anticoagulated patients apparently had the same incidence of ecchymosis as others.

Only a few minor and self-limited local infections around indwelling ear studs and none around other needles were observed. Although not seen in this series, periorbital cellulitis is a concern. Patients should be alerted to be aware of it and a contingency treatment plan developed.

### DISCUSSION

The acupuncture mechanism of action is not known at this time. Three possibilities are:

1. Blood supply to the retina may be increased.
2. The Retinal Pigment Epithelium is responsible for providing nourishment and removing wastes from the retina. Possibly its function is improved.
3. Neuro-electrical function may be improved by electroacupuncture.

Further investigation is needed to determine that the results are due strictly to the "Acupuncture AMD Protocol." Results could be skewed by patients' increased experience in taking the tests, patients could attempt to please the investigator by performing well, or the Hawthorne effect of being studied could influence test results. The possibility exists that it is not changes in the function of the retina, but rather changes in the periorbital muscles that result in improved vision.

### CONCLUSION

Of 108 patients treated by acupuncture for AMD disease, 69% improved in near vision and 69% improved in distant vision as measured on EDTRS charts. Both wet and dry AMD conditions benefited. All patients were ophthalmologist-diagnosed, not just self-reported. A number of subjective improvements were frequently reported. Among them were better color vision, less need for intense light/contrast, better night vision, less distortion, reduced scotoma size, and increased clarity of vision.

Further research is needed to optimize the Acupuncture AMD Protocol and to ascertain its mechanism of action. Also, it would be useful to know how much vision improvement is possible since, in this series, patients were not all treated until there was no further gain in visual acuity.

To better evaluate the acupuncture effects, further investigation should include other measurements such as retinal photographs and ocular computed tomography to measure and document changes in

drusen and retinal pigment epithelium. Retinal fluorescein angiograms are invasive but could document vascular supply changes. Possibly visual field exams could document changes in the size of scotomas. Pupil diameter recording could help indicate whether a mechanism other than changing the retina is taking place.

The Acupuncture AMD Protocol may contribute to the improvement of vision in AMD patients. Alternatives of no treatment or the limited benefits of thermal or cold photocoagulation and intravitreal injection of pegaptanib make acupuncture an attractive therapeutic consideration.

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### AUTHOR INFORMATION

Dr Alston Lundgren is Board-certified in Medical Acupuncture and Family Practice. He has a private practice limited to Medical Acupuncture in Santa Fe, New Mexico.

Alston C. Lundgren, MD, FAAFP, FAAMA\*  
460 St. Michael's Dr, Ste 801  
Santa Fe, NM 87505  
Phone: 505-986-0910 • E-mail: alstonmd@earthlink.net

\*Correspondence and reprint requests