

The Burnham Review

Glaucoma and Manual Therapy

Consider Manual Therapy and Complementary and Alternative Medicine for Optimal Vision

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CAM and Glaucoma

More and more people are looking to manual therapy and complementary medicine approaches to assist in resolving visual symptoms. This issue of The Burnham Review explores options for people with glaucoma and other visual dysfunctions.

In a study to estimate the prevalence of complementary and alternative medicine (CAM) for glaucoma and inquire about the perceived benefit of these treatments, researchers evaluated, 1027 patients from two urban, referral glaucoma practices.

“The response rate was 97.4%. The percentage of people reporting use of CAM for glaucoma was 5.4% (54 of 1000 subjects) with 32 of these 54 (59%) having used more than one type. The percentages of those using the various types of nontraditional medicine were: megavitamin therapy (62.9%), herbal therapy (57.4%), exercise (24.0%), diet modification (22.2%), meditation, (1.8%), acupuncture (1.8%), faith healing (1.8%), and homeopathic remedies (1.8%).

Patients who used CAM were more likely to be educated beyond high school and less likely to be retired. Of those using nontraditional therapy, 52% believed that it was helpful, 39% were unsure, and 9% considered it not helpful; 72% discussed their use with an ophthalmologist.¹ (Rhee,2002).

Glaucoma Questionnaires

“Health related quality of life (HRQOL) outcome is becoming important and of interest for clinicians and patients alike. HRQOL can be affected immediately after the initial diagnosis of the disease through anxiety of blindness. Further impairment in various aspects of HRQOL is expected over time as the disease progresses, reducing daily activities.

Of the 10 instruments reviewed, 2 were generic, 4 were vision-specific and 4 were glaucoma-specific instruments. Overall, vision- and glaucoma-specific instruments appear to be more sensitive than generic instruments in detecting potential changes of HRQOL in the

patients. The shortcoming of existing instruments, however, arises from being predominantly focused on physical functions while omitting other aspects relevant to patients HRQOL such as psychological and social well-being. In addition, many vision-specific instruments have inadequate coverage of important issues, such as peripheral and color vision, which are affected by glaucoma disease. Validation of the instruments using various magnitudes of visual field is warranted and further investigation of their responsiveness is required for them to be more useful for outcome evaluation in the clinical setting. Refinement of an instrument to enhance the incorporation of HRQOL in routine management of patients with glaucoma is briefly described.² (Tripop,2005).

Hands On Solutions for Visual Dysfunctions

Integrative Manual Therapy (IMT) clients, literally seeing

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improvements, include both adults and children with visual labels such as detached retina, lazy eye, visual headaches, migraines with visual auras, cataracts, glaucoma, corneal ulcers, keratoconus, astigmatism and dyslexia. IMT is also effective for clients with conditions involving an eye component, such as spinal cord injuries, multiple sclerosis, high blood pressure, seizures, tinnitus, Cerebral palsy and Down's syndrome.³

NFP for Vision

A self-care piece you can do at home is the Neurofascial Process with one hand on the eyes and the other on the Low Back/Ureters for a total of several hours and then several hours of NFP from the eyes to all process centers. There is detailed information about this easy to do, yet time consuming self-care approach in the book *Body Wisdom*.⁴(Weiselfish-Giammatteo, 2002).

Baropathic Disorders and Essential Fatty Acids

Another study looked at glaucoma in relationship to other pressure related issues.

"Glaucoma may be one of a set of "baropathic" disorders including tinnitus, Meniere's disease, arthritis and bursitis caused by transport dysfunction in the "tissue membranes" of the set of closed "tissue cells" envisioned by The Tissue Cell Theory of Metazoa and which result, in turn, from prostaglandin disturbances induced by primary or secondary essential fatty acid deficiencies possibly coupled with immunopathic effects."⁵ (Rudin,1980).

There are many specific nutritional supplements to improve vision. The general ones are essential fatty acids

and vitamin B complex, for specifics speak to a trained nutritional therapist, who can evaluate what would be best for you as an individual.

Blood Sugars & Corneal Stiffening

In this study researchers determined, how changes in corneal elasticity/stiffness might influence intraocular pressure (IOP) readings in diabetic patients. They concluded, "glucose-mediated corneal stiffening due to collagen cross-linking might be responsible for IOP overestimation in diabetic patients. Corneal stiffening might explain why diabetic eyes tend to have higher IOP readings in large population-based studies and why those with ocular hypertension have a reduced risk for glaucoma progression."⁶ (Krueger,2007).

Glaucoma, Corneal Mechanical Stress and Membrane Integrity

"Glaucoma is the second leading cause of blindness worldwide. It has many risk factors such as age, race, sex, intraocular pressure, optic nerve changes, corneal thickness, refractive error, systemic diseases, family history and trauma.

Central corneal thickness plays an important role in risk stratification among patients in whom glaucoma was of concern. Scleral thickness and central corneal thickness have a moderately positive correlation.

Stress [mechanical stress] is responsible for glaucoma and causes deformations of the retinal layers and the consequent high levels of neural tissue strain. Stress and scleral thickness have inverse relation together and since scleral thickness is related to central corneal thickness positively, stress is related to central corneal thickness inversely.

Risk of progression of glaucoma

damage has an inverse relation with the central corneal thickness. Based on formula of stress, when central corneal thickness decreases, the amount of stress increases inversely. This leads to more interruption of retinal layers and consequent higher levels of neural tissue strain that increases the risk of suffering glaucoma."⁷ (Mehdizadeh, 2007).

A number of manual therapy approaches focus on scaring and connective tissue thickening with techniques to increase tissue mobility, fluid flow and circulation which decrease thickening of the connective tissue. Myofascial release is one example.⁸ (Weiselfish-Giammatteo & Kain,2005).

Lymphatic System, The Eyes and Ears

In chapter 11 of the osteopathic text, *Applied Anatomy of Lymphatics* written circa 1922, Glenn S. Moore, DO, Chicago write about the relationship between the lymphatic system and the eyes and ears.⁹ (Millard,1922).

"Lymph drainage is an important feature in the balance of the body mechanism, and the factors whereby this physiological equilibrium is maintained are of utmost importance.

The lymphatics of the eye are numerous and extensive. They consist largely of lymph spaces which communicate directly or indirectly with one another.

According to Deaver, any obstruction in the anterior lymph channels will cause an increase in intra-ocular pressure. For example, such conditions as annular posterior synechia, involving the entire pupillary margin of the iris to the extent of causing it to adhere to the anterior surface of the capsule of the

lens will prevent the lymph of the posterior chamber from entering the anterior chamber through the pupil. This would result in causing the iris to project against the cornea, closing off the drainage through the space of Fontana and the canal of Schlemm. Such a serious condition gives rise to a symptom complex known as glaucoma. In addition to this, glaucoma may result from a hypersecretion of lymph in the eyeball. I am of the opinion that many cases of glaucoma which we are treating today with good results are of this type.

In summarizing, therefore, we have a triple lymphatic drainage from the eye by way of first, the eyelid, through the buccal and submaxillary lymph glands of the head to the superficial lymph glands of the neck. Secondly, this drainage is by way of the anterior lymph channels of the eyeball (canal of Schlemm and spaces of Fontana and anterior posterior chambers) all draining to the internal maxillary lymph glands. The third avenue of drainage is by way of the posterior channels of the eyeball (Hyaloid canal, supra- and infra-vaginal lymph spaces and perichoroid lymph space) all draining to the subdural and subarachnoid spaces of the brain.

In conclusion, it is to be noted that the eye and the ear have a somewhat correlative system of lymph drainage. This drainage includes the subdural and subarachnoid spaces of the brain which are partial terminals of the drainage of the more intricate structures of the organs. So far as the superficial and deep drainage of the neck is concerned, the facilitation of this drainage is brought about by the deep relaxing of the region of the clavical and first rib. By so doing the drainage is "freed," as we say,

that is, there is brought about an actual minute increase in the intervascular spaces allowing for the greater flow of blood and lymphatic fluid because of the mechanical as well as chemical changes which become possible.

The muscular relaxation which is involved in the process helps to lift the mechanical pressure which by tightening of the fibres has brought about contracture of the whole region. In addition to this there is accomplished a metabolic process of repair of the cells which, because of interference with drainage and nutrition, have become over-laden with toxic products such as CO₂ and other substances. By virtue of the "freeing up" process this intracellular drainage is accomplished and the intercellular accumulation of edematous material is allowed to flow more freely downward to the subclavian vein.

Therefore, the clavicular work is indicated in general introductory work for all cases involving the lymphatics of eye and ear. It should not be considered as purely introductory, for it will be well in all cases of inflammation of either organ to continue the clavicular treatment as long as indicated for drainage.

The special treatment as originated by Dr. Edwards for local freeing of the lymph is of great value after the general freeing of the deep and superficial lymph drainage of the neck. Treatment at the first, second and third lumbar helps to open the cerebrospinal lymph drainage thus clearing the way for the special local treatment of the inner ear."¹⁰ (Millard,1922).

Pain and Acupuncture

Pain that does not respond to conventional treatment procedures

makes it necessary to look for alternative methods.

Many manual therapy approaches are thought to have a reflex or nervous system effect through the use of reflex points. These therapies include acupuncture, reflexology, integrative manual therapy, osteopathic manual medicine, and NAET.

"Acupuncture is an ancient procedure with empirical effects on pain. Previous studies established the increased output of messengers at neuronal junctions in spinal cord and hypothalamic locations, especially of endorphins which inhibit the perception of pain.

We treated several painful symptoms with acupuncture and evaluated the outcome of the treatment. Patients with various kinds of therapy-refractory pain and patients in whom conventional treatment methods could not be applied were included in the study. The diagnoses included glaucoma, Tolosa-Hunt-Syndrome, ophthalmic migraine, blepharospasm, and dry eyes.

Acupuncture had no side effects, but reduced pain to a variable extent. Especially in cases of severe pain and in surgery, very effective pain reduction was achieved. In general, pain was significantly reduced in all patients by the use of acupuncture."¹¹ (Nepp,2002).

Glutathione, Turmeric, Selenium Nutrition for Cataracts and Alzheimer's Disease

Glutathione benefits cataracts, glaucoma, Alzheimer's, and Parkinson's. Turmeric in curry protects diabetic eyes.

Deficiencies of glutathione are seen in conditions of oxidative stress, including cataracts, Parkinson's

disease, glaucoma, and Alzheimer's disease. Chronic glutathione deficiencies are associated with certain immune disorders, HIV, development of cataracts, and an increased incidence of certain types of cancers. Glutathione deficiencies are also seen in toxicity issues such as an overdose of medications, decreased liver function or in cases where overall nutrients are lacking in the diet as in some eating disorders and malnutrition.

A potent antioxidant, glutathione is produced in the human body from the synthesis of three key amino acids - cysteine, glycine, and glutamic acid.

Nutrients to increase glutathione levels and activity include lipoic acid, vitamins E and C, and selenium (Brazil nuts, meat, seafoods). The B vitamin riboflavin (sunflower seeds, spinach, avocados) appears to play an essential role as a precursor co-factor for glutathione.

Asparagus is a leading source of glutathione. Broccoli, avocado and spinach are also known to boost glutathione levels. Garlic helps to maintain optimal glutathione levels. Other foods with naturally high levels of glutathione are grapefruit, squash, potatoes, cantaloupe, peach, zucchini, spinach, watermelon, and strawberries.

Fish, meat, and foods which yield sulfur containing amino acids (e.g. eggs) are preferred sources for maintaining and increasing bodily glutathione levels.

Turmeric, an Indian curry spice has been used in the treatment of brain cells called astrocytes.

Curcumin, an active ingredient of turmeric (*Curcuma longa*), inhibits proliferation and induces apoptosis in cancer cells, but the sequence of events leading to cell death is poorly

defined. The spice's affect on diabetic cataracts as well as another visual problem, diabetic retinopathy has also been documented.¹² (Burnham,2007).

Blood Flow Regulation

Manual therapies which improve movement and the response of the autonomic nervous system and musculoskeletal system's response to postural changes may also help glaucoma.

One project found, "autoregulation of blood flow during posture change is important to ensure consistent organ circulation. The purpose of this study was to compare the change in retrobulbar ocular blood flow in glaucoma patients with normal subjects during supine and upright posture.

When changing from the upright to supine posture, normal subjects demonstrated a significant increase in open angle end diastolic velocity and significant decrease in open angle resistance index and central retinal arteries resistance index.

Glaucoma patients demonstrated similar changes in open angle measures of end diastolic velocity and resistance index, but no change in central retinal arteries measures.

Glaucoma patients exhibit faulty autoregulation of central retinal artery blood flow during posture change."¹³(Evans,1999).

Ocular Massage

In a study to investigate the immediate and longer-term effect of ocular massage on intraocular pressure (IOP) after Ahmed valve insertion, ocular massage was performed by both the physician and the patient.

"During a 20-month period between January 2004 and August 2005, 20 of 52 patients underwent a

course of ocular massage. They were compared on IOP and the number of ocular hypotensive medications required with the 32 patients whose IOP was satisfactory after surgery.

The mean time to initiation of massage was 29 days (range 8-141 days), and the mean total duration of massage was 127 days (range 18-273 days). At the initiation of massage, the mean IOP was 19.2 mm Hg, significantly higher than at any other postoperative visit. Immediately following massage, the IOP was reduced by 40% to 11.6 mm Hg.

This is the first report to document that ocular massage is a safe and effective manoeuvre for the management of elevated IOP after Ahmed valve insertion. Massage resulted in an immediate reduction of IOP, and, despite initial higher postoperative IOP in the massage group, there were no differences between groups at 1 year with regard to IOP reduction or requirements for medications."¹⁴ (McIlraith,2008).

Reflexology Studies

"The American Academy of Reflexology conducted the first reflexology research study to ever be published in scientific medical literature, when the study appeared in the prestigious journal, *Obstetrics and Gynecology*, Vol. 82, #6, December 1993. This ground-breaking study was reported around the world, including in *Journal Watch*, which is published by the same people who publish the *New England Journal of Medicine*.

Publishing of the study, and the wide spread reporting that followed in magazines, newspapers, numerous professional journals, as well as on radio, television, for the first time, gave Reflexologists around the world the ability to say, "Yes" when asked

if there was any published scientific Reflexology Research validating that Reflexology works." ¹⁵(American Reflexology Association, 2006).

Since the study was published, many other Reflexology Research Studies have been reported around the world. For any number of reasons, the PMS Reflexology Research Study has helped open doors for others around the world to conduct their studies, including one on the effects of reflexology on the eyes and glaucoma (-----,1993). ----- (1993) "Foot Reflexology Therapy in Ophthalmic Diseases." 1993 China Reflexology Symposium Report, Beijing, China Reflexology Association, pages 73-74. Zhou, Y

Acupuncture and Eye

Glaucoma is one of the most frequent causes of blindness worldwide. A number of studies have been done on the affects of acupuncture on glaucoma. Here are the results from a few.

"Eighteen patients with a diagnosis of glaucoma or ocular hypertension: (n = 15) received one session of a standardized acupuncture treatment (acupuncture points Liv 3, Li 4, Gb 37). Target parameters were the change in intraocular pressure and the compatibility of treatment. Compared with the mean intraocular pressure in both eyes before treatment (21.94 +/- 2.4 mm Hg), patients showed a significant decrease 15 min after treatment (-2.67+/- 1.34 mm Hg) as well as 24h after treatment (-2.5+/-2.13 mm Hg).

The results of this study indicate that acupuncture therapy may be a valid treatment option for glaucoma and ocular hypertension patients."¹⁶ (Uhrig,2003).

"Acupuncture and moxibustion treatment has good therapeutic

effects on the intractable eye diseases including pigmentary degeneration of retina, macular degeneration, glaucoma and optic atrophy, etc."¹⁷ (Xu,2008).

In a study to explore the possibility of using acupuncture for patients with glaucoma, researchers worked with eleven patients with glaucoma.

"Acupuncture was carried out twice a week over 5 weeks.

IOP was significantly improved at 15 minutes after acupuncture, at one week, two weeks, and five weeks and tended to be lower weekly. Uncorrected visual acuity was significantly improved at three weeks, four weeks, and five weeks, and best corrected visual acuity was significantly improved at five weeks. However at the four-week follow-up, significance remained only in uncorrected visual acuity."¹⁸ (Kurusu,2005).

Another study on rats found, "application of ElectroAcupuncture (EA) at 2 Hz provides neuroprotection by preserving retinal function in rats with experimental glaucoma. Low frequency EA may be an alternative therapy in the treatment of glaucoma."¹⁹(Chan,2005).

Microtubules and Pressure

Hypertrophy can contribute to pressure related problems in the heart, eyes and kidneys. Several studies have found a relationship between hypertrophy and the microtubule pressures in the cells.

"Contractile dysfunction in pressure overload-hypertrophied myocardium has been attributed in part to the increased density of a stabilized cardiocyte microtubule network.

In direct support of the microtubule hypothesis, we show

here that cardiocyte microtubule network density, as an isolated variable, is inversely related to contractile function in vivo and in vitro, and microtubule instability rescues most of the contractile dysfunction seen in pressure overload-hypertrophied myocardium."²⁰(Cheng,2008).

"Thus the progressive increase of microtubule density during left ventricle hypertrophy due to persistent pressure overloading to the myocardium may cause the consequent myocyte contractile dysfunction."²¹(Ishibashi,1996).

The interesting thing about microtubules and energy work is that in addition to shifting pressures they have been linked to shifting consciousness and to connective tissue disorders."²² (Burnham,2008).

The images on these sites are particularly interesting. Alzheimer's disease is associated with a crumble effect of the microtubules (the skeletal system like structure of the cell) of the neurons. ²³(Bren,2008).

Another site associates consciousness with the microtubules via a quantum physic mechanism."²⁴ (Hamerhoff,2008).

Integrative Manual Therapy²⁵ (Giammatteo, 2002) links the pressures within the microtubules with the connective tissue blueprint series, which also helps with immune system function by improving flow of nutrients and waste products through the connective tissue."²⁶ (Burnham,2008).

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