

The Burnham Review

Cataracts, Lens, Vision and Integrative Medicine

Consider Manual Therapy and Complementary and Alternative Medicine for Optimal Health

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Cataracts and Alzheimer's The Antioxidant Connection

Eating your way to better lens health may be the easiest way to prevent cataract, slow the progression of cloudy lens, while also decreasing your risk of Alzheimer's disease.

Cataracts are essentially a scaring, an increased opacity or clouding of the lens of the eye.

The lens sits behind the iris, the colored part of the eye and the pupil, the center black part. To see clearly we use the lens to focus an image on the retina at the back of the eyeball. When the lens is cloudy or inflexible it doesn't adjust or allow the image to come through clearly.

Like much of our body the lens is primally made up of water and protein. The proteins are arranged in a specific way in order for the light to pass through. Cataracts form when the proteins are misfolded and clumped together.

Fascial strands is one of the connective tissue techniques used by Integrative Manual Therapy practitioners to address this kind of

scar tissue.

This issue of The Burnham Review also includes a fascinating Osteopathic Manual Treatment (OMT) report from 1906 on treatment for diabetes and the resulting

diabetic cataracts.

It also looks at the effect of treatments for Alzheimer's disease on cataracts.

There are even references to "Eye of Newt" not the Shakespearean Witches kind but rather their ability to differentiate.

Types of Cataracts

There are several kinds of cataracts. The most common is the nuclear cataract, which forms in the center of the lens and often are found in people who have had a long time to be exposed to sunlight, radiation and toxicity in their environment.

Cortical cataract forms in the outer part of the lens, gradually extending into the center.

These are most common in diabetics and people with Alzheimer's disease.

High doses of steroid and visual conditions such as diabetes, farsightedness

and retinitis pigmentosa can cause a cataract to form in the back of the lens, called a subcapular cataract.

Newt Lens Regenerates from Iris

This research indicates that any therapy which addresses regeneration and differentiation may help with lens health and cataracts.

"The adult newt can regenerate lens from pigmented epithelial cells (PECs) of the dorsal iris via dedifferentiation." Researchers concluded, "the expression of cancer- and apoptosis-related genes could be hallmarks during dedifferentiation."¹(Maki,2010).

"The [salamander lens regeneration] process is characterized by dynamic changes in the organization of the extracellular matrix in the eye, re-entering of the cell cycle and dedifferentiation of the dorsal iris pigment epithelial cells."²(Tsonis,2004).

Natural Therapies for Cataracts

"Pathophysiological mechanisms of cataract formation include

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deficient glutathione levels contributing to a faulty antioxidant defense system within the lens of the eye.

Nutrients to increase glutathione levels and activity include lipoic acid, vitamins E and C, and selenium. Cataract patients also tend to be deficient in vitamin A and the carotenes, lutein and zeaxanthin. The B vitamin riboflavin appears to play an essential role as a precursor to flavin adenine dinucleotide (FAD), a co-factor for glutathione reductase activity.

Other nutrients and botanicals, which may benefit cataract patients or help prevent cataracts, include pantethine, folic acid, melatonin, and bilberry.

Diabetic cataracts are caused by an elevation of polyols within the lens of the eye catalyzed by the enzyme aldose reductase. Flavonoids, particularly quercetin and its derivatives, are potent inhibitors of aldose reductase.”³ (Head,2001).

Therapies which improve digestion, ensuring nutrients get to the eyes and decrease all diabetic symptoms may also improve cataracts.

Nutritional Energy Reflex Points

“From Applied Physiology this chart contains all the reflex or circuit locating points for nutritional deficiencies and excesses.

Includes vitamins, minerals, proteins, digestive enzymes, toxic chemicals and heavy metals. Also includes the latest research e.g. choline, B6, Cadmium, Mercury etc.”⁴(Lexicon.net, 2010).

Glutathione and Antioxidants

Antioxidants are the antidote to oxidative stress in the tissue. Oxidative stress can be thought of as body rust because oxidation also

causes metals exposed to the elements to rust. Oxidative stress shows up in areas where free radical molecules irritate the cells and cellular structure.

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. The B vitamin riboflavin 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.⁵(Burnham,2007).

Acupuncture and Cataracts

“Is acupuncture of any use in

ophthalmology?

Despite an inability to explain in modern scientific terms the healing power of acupuncture, documentation of over 500 cases treated shows that this modality can be successful in the treatment of eye diseases, especially in cases of retinitis pigmentosa, high myopia, cataracts, surgical aphakia, controlled glaucoma and re-attached ablation retinæ.

We notice in these cases that improvement occurs in the central acuity. Dimness of vision is a symptom which can be alleviated in many cases with periodic treatment.”⁶(Wong,1980).

Reflexology Studies and Cataracts

The American Academy of Reflexology conducted the first reflexology research study published in scientific medical literature. The study appeared in the prestigious journal, *Obstetrics and Gynecology*, Vol. 82, #6, December 1993.”⁷(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 the two on the effects of reflexology on Cataracts. ⁸(Huang,1993).

Cataracts and Diabetes

From the field of Osteopathic Manual Treatment comes this report on Diabetes, “almost invariably there will be found a posterior dorso-lumbar curvature where in the spinal column tissues are much contracted.

This condition probably involves the sympathetics (vaso-motor and

trophic) to the pancreas, liver and intestines. Important lesions may also be found as high as the occiput. Tenderness and congestion over the abdomen, especially the liver, are frequent.

Diabetic complications include, diabetic coma and a sudden or gradual loss of consciousness, peripheral neuritis, neuralgia, numbness, tingling and diabetic tabes characterize the pain in the legs. Impairment of hearing, cataracts, strabismus, diabetic retinitis and atrophy of the optic nerve may occur."

Researchers noted, "a number of cases have been cured by osteopathic measures while nearly all treated have been benefitted.

Treatment address the low back and area of the spine enervating the pancreas and organs. In nearly all cases of diabetes mellitus examined there have been found posterior conditions of the lower dorsal and lumbar regions. The posterior curve has always been fairly well marked and generally is a symmetrical curve.

By that is meant a spinal curve that is not irregular and the relation of the various vertebrae, one to the other, is not seriously deranged. Correction of this condition of the spinal column has almost invariably given satisfactory results and in the majority of cases the condition of the patient has improved remarkably, and a few were entirely cured.

To get the best results the patient should be laid on his side on the operating table and the knees drawn up so that the thighs are flexed upon the abdomen. The osteopath standing in front of the patient throws his weight against the flexed thighs and reaching over upon the spinal column springs the entire weakened portion of the spine toward its normal

position, stretching the spinal column to separate each vertebra from its neighbor so that the impinged nerves, as they pass through the intervertebral foramina, may be released. Meeker (Journal of the American Osteopathic Association, Oct. 1904) reports a case with a marked kyphosis which was treated two years before enough motion could be had between the vertebrae to produce any results, but after that they were favorable. Direct treatment to the abdominal organs to correct liver congestion, stimulate the pancreas and to increase activity of the intestines is essential.

The nerves affected by the posterior pathological curve of the spine, mentioned above, and by separate lesions that may exist within the pathological curvature, are probably the vaso-motor nerves to the portal system, pancreas and the intestines. The vaso-motor nerves to the portal system branches are given off principally from the fifth to the ninth dorsal vertebra, although fibres may escape from the cord as low as the first lumbar vertebra. The nerves to the intestines are given off principally from about the ninth dorsal to the lower lumbar vertebrae. Possibly there are nerve fibres direct to the hepatic cell protoplasm.

How lesions in the dorso-lumbar region cause diabetes mellitus is an important question and is hard to answer. An unnatural acceleration of the portal circulation may cause an increased quantity of sugar to pass to the liver, resulting in part of the sugar not being changed into glycogen and thus passing into the circulation; or a paralysis of the vaso-motor nerves to the liver causes congestion and slowness of the blood stream. Thus a disturbed circulation of the liver may cause accumulation of sugar in the

liver, so that the blood ferment has time to act upon the glycogen and transform it into sugar; or there may be a saccarinity of chyle or blood in the portal vein, due to an impeded conversion of sugar in the intestines into lactic acid; or there may be an accelerated absorption of sugar due to an abnormal state of the intestines; or the nervous control to the pancreatic functions may be disturbed. Hence, one or many pathological changes may occur and influence a case of diabetes, due to a disordered dorso-lumbar region.

The center for the hepatic vaso-motor nerves, "diabetic center," is in the floor of the fourth ventricle at the level of the origin of the vagi nerves. A lesion of the "diabetic center" or an obstruction to the pneumogastric anywhere along its course may cause diabetic symptoms; hence, there may be lesions of the cervical region that would affect reflexly the diabetic center, or lesions of the pneumogasttric may occur, particularly at the atlas or axis, and cause diabetic symptoms, or, at least, these may influence the course of a case of diabetes mellitus.

There are nerves from the superior and inferior cervical ganglia of the sympathetic that have considerable influence upon the liver. These nerves do not pass down the cord to the splanchnics, but pass in the sympathetic to the celiac and hepatic plexuses and then to the liver. Stimulation of these nerves causes the hepatic vessels at the periphery of the liver lobules to become contracted. Possibly in a very few cases, a stagnation of blood in other vascular regions of the body may cause the blood ferment to accumulate in the blood to such an extent that diabetic symptoms occur.⁹(McConnell,1906).

Obesity & Cataracts

“Obese women are two and a half times more likely to get a certain type of cataract than healthy weight women.

More than half of all people age 75 and older suffer some vision problems because of cataracts. It the Tufts Laboratory for Nutrition and Vision Research study findings holds up in future studies, it could mean that just losing some excess weight may help ward off cataracts in the later decades of life.”¹⁰(Tufts University,2004).

Cataracts and Imagery

Researchers are also looking at complementary medicine and imagery, visualization as a way to decrease surgery symptoms and shorten recovery time after cataract surgery.¹¹ (Simmones,2004).

Dizziness and Cataracts

“While dizziness has traditionally been considered solely as a symptom of discrete diseases, recent findings from population-based studies of older persons suggest that it may often be a geriatric syndrome with multiple predisposing risk factors, representing impairments in diverse systems.

Seven factors were independently associated with a report of dizziness, namely depressive symptoms, cataracts, abnormal balance or gait, postural hypotension, diabetes, past myocardial infarction, and the use of three or more medications. Of patients with none of these risk factors, none reported dizziness. This proportion rose from 6% among patients with one factor, to 12%, 26%, and 51% among patients with two, three, and four or more factors, respectively.

A multifactorial intervention

targeting the factors identified in these studies may be effective at reducing the frequency or severity of dizziness in older patients.”¹²(Kao,2001).

Cataracts, Alzheimer's and Vitamin E

In 2005, in *Annals Pharmacotherapy*, Pham, et al reviewed the medical literature on Vitamin E in Parkinson's disease, tardive dyskinesia, cataracts and Alzheimer's and noted, "The study reviewed for Alzheimer's disease seemed to show benefit when vitamin E was used; however, the statistical methods employed are questionable." They concluded, "we encourage patients to supplement with vitamin E-rich foods. The use of a daily multivitamin, which usually contains 30 IU of alpha-tocopherol, may be beneficial."¹³(Pham, 2005).

Cataracts and Alzheimer's Disease

In one kind of cataract, found in people with Alzheimer's disease, beta-amyloid proteins cause the clouding of the lens behind the iris. These are the same proteins that contribute to Alzheimer's disease by forming plaques in the brain. These proteins have a beneficial side and a destructive side.

The components that are made into Beta amyloid proteins or the Beta amyloid precursor protein help our nervous system tissue grow and heal. In particular they have a nerve growth factor-like activity. Inside the cell these proteins are also protective and delay cell death.

On the other hand, the Beta amyloid proteins are also a key factor in the oxidative stress and inflammation, which can lead to cell death and are characteristic of Alzheimer's disease.

A study from 2006 noted, "our

results suggest that *Uncaria rhynchophylla* has remarkably inhibitory effects on the regulation of Beta amyloid fibrils, and we conclude that this medicinal herb could have the potency to be a novel therapeutic agent to prevent and/or cure Alzheimer's disease."

Sufficient levels of Vitamin A have also been linked to slowing down or reversing the expression of Beta amyloid proteins.

Proteins, rich in sulfur containing amino acids and in particular whey protein from milk or cheese that has not been heated can be beneficial in cataracts because they optimize glutathione levels.

Other nutrients and botanicals, which may benefit cataract patients or help prevent cataracts, include pantethine, folic acid, melatonin, and bilberry.¹⁴ (Burnham,2007).

Turmeric (Curcumin)

Turmeric, an Indian curry spice has been used in the treatment of brain cells called astrocytes. It has been found to increase expression of the glutathione S-transferase, protect neurons exposed to oxidant stress and has other benefits as well. "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.¹⁵(Burnham,2007).

Selenium and Cataracts

The evidence surrounding selenium and cataracts is anything but clear. A 1995 study put it this way, "Cataractogenesis [the formation of cataracts] may be caused either by the excess or

deficiency of this trace element."

Selenium is an essential trace mineral and studies suggest it may play a role in decreasing the risk of certain cancers, affect the immune system and thyroid activity. This is all good. However, too much selenium can cause some toxic effects including gastrointestinal upset, brittle nails, hair loss and mild nerve damage.

A 2007 study noted that people with the most opaque and colored cataracts had the most selenium in the lens and the least selenium in the blood. In diabetics, changes in the levels of selenium in the lens and in the blood were detectable before the onset of severe symptoms. Smokers has decreased selenium levels in both the lenses and the blood., perhaps due to the anti-inflammatory effect of nicotine. Researchers are also looking at nicotine as an anti-Alzheimer's disease medication because of its effect on Beta Amyloid Proteins. While smoking has been associated with increased cataract formation.

Biomechanics of Lens Shape

"Anterior and posterior lens surface curves exhibit a decrease in radius of curvature with increasing age. In contrast, the shape of the lens nuclear boundaries changes little with age. Overall lens volume at zero diopters increases with age, but the volume of the lens nucleus remains unchanged. The lens center of mass moves anteriorly with increasing age, as does the central clear region.

Factors, such as anterior chamber depth, for each subject leads to a very high statistical correlation between lens shape and lens location relative to the cornea. This supports the finding of previous work that image formation on the retina for a given

individual results from the multifactorial balancing of related factors.¹⁶ (Koretz,2001).

Hands On Solutions for Visual Dysfunctions

There is a Nicaraguan saying, "Eyes that see do not grow old." Many people are asking "how do we see better and better as we age rather than face progressive visual loss as the birthday's come and go." There are more and more people who are improving their vision through the use of hands on therapies from the field of Complementary and Alternative Medicine as well as by shifting diet and nutrition and doing **v i s u a l e x e r c i s e s**.¹⁷ (Giammatteo,1997) and¹⁸ (Wheeler,2004).

NFP for Vision

The best 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.¹⁹ (Weiselfish-Giammatteo, 2002)

Biophysiology

There is nutritional supplements to improve vision the general ones are essential fatty acids and vitamin B complex, for specifics speak to an IMT therapist, who can evaluate what would be best for you. Drinking Green tea is also beneficial for eye health.

Reflection Therapy

The visual component of Reflection Therapy makes it ideal for helping a variety of visual conditions as well as a range of nervous system and limbic system issues.²⁰ (Giammatteo, 2001).

Meir Schneider Exercises Sunning

This exercises helps relax the eyes

and improve night vision and decrease sun sensitivity on a bright day. Stand facing the sun with your eyes closed. Keep eyes closed throughout the exercises.

Slowly turn your head to the right. Then cover your eyes with you right hand. Then remove your hand and turn your head back to face the sun. always keeping your eyes closed. Then turn your head to the left. Then cover your eyes with your left hand. Then remove your hand and turn back towards the sun, then repeat by turning your head to the right. Repeat 5-10 times several times a day. Each place (facing the sun, turned to the right and turned to the left) should take 3-5 seconds. So one cycle takes 15-20 seconds.²¹(Schneider,2008).

Relaxing Focusing Muscles

This exercises helps improve visual acuity and relaxes the muscles of the eyes that help us to focus. It can also help decrease sensitivity to sunlight on a bright day.

Stand facing away from the sun. Hold your arm out in front of you with your index finger in the air. Slowly swing your finger and body, rotating the finger in front of you. Swing your finger and body to the right then to the left. As you rotate look at the index finger. Swing from right to left several times while looking at the index finger. Then continue to swing from right to left but look out to the distance. Repeat this several times then go back to looking at the index finger.²²(Schneider,2008).

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