

LIVING WITH GLAUCOMA

From the Meeting of

June 21, 2014

RESEARCH FINDINGS FROM THE LAB of

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WHAT RESEARCH CAN TELL US

I recently heard Joan Rivers on NPR who has just published a new book full of goofy commentary, like going on the internet to find out why she's feeling blah and reporting on the number of diseases she is sure she has based on her symptoms.

Remember her? The wry comedian? She's still around at age 80. Like Rivers, we want to know why we have glaucoma in the first place. Sure, we understand that it may be genetic, but perhaps our siblings do not have it. So we eagerly turn to research hoping to find both answers to its etiology in our own cases and to possible cures, questions that brought us to the workshop on Research from the clinical research center of Dr. Robert Ritch, et al., and aptly presented by Jessica Jasien, chief researcher. When we examine research findings, we need to bear in mind several important facts:

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- 1. A small cohort is only a teaser; if it raises questions, then the study needs to be expanded to a number of different sites and enroll many more patients and controls, preferably world-wide.**
- 2. Whatever the results of a study, your individual case may or may not reflect a particular direction. Only you and your doctor can determine the best course of treatment to manage your condition.**

That said the studies presented on June 21, 2014 do offer some insights that may prove relevant especially the small study on yoga positions.

STUDY #1

CPAP has been reported to increase IOP overnight in OSAS patients.

The purpose of the study was to investigate whether continuous positive airway pressures (CPAP) affect IOP in Obstructive Sleep Apnea Syndrome (OSAS) patients' as recorded by a CLS in OSAS patients with and without POAG.

***CLS – a monitory device called Sensimed Triggerfish was used in the study.**

Sleep apnea is a condition whereby you stop breathing while sleeping and wake up at night gasping for breath. Medically, it's termed Obstructive Sleep Apnea Syndrome.

OSAS is associated with reduced ocular blood flow and ocular perfusion pressure, lading to hypoxia (too much oxygen) and hypercapnia (too much carbon dioxide) – factors that may contribute to glaucoma along with a coinciding decrease in blood pressure.

POAG patients with the use of CPAP have a less steep W/S (wake/sleep cycle) slopes, a higher maximum nocturnal IOP peak, and a lower mean nocturnal IOP value as compared with Non-POAG patients using CPAP who have a steeper W/S and S/W slopes, and a lower maximum nocturnal IOP peak, a lower mean nocturnal IOP peak value. Therefore, CPAP flattens the nocturnal pattern.

The study under review tested whether glaucoma patients benefited from IOP pattern treatment with the use of CPAP. The study found that this treatment during the sleep cycle did benefit both the glaucoma patients and also the control group who did not have glaucoma. Based on the results and taking into consideration that a prospective study in glaucoma patients has not yet been performed along with the information that CPAP treatment on ocular perfusion pressure and oxygenation may outweigh effects of IOP elevation, the researchers have recommended a larger study.

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STUDY #2

EXFOLIATION SYNDROME

Short Duration Transient Visually Evoked Potential

Background: Exfoliation syndrome (XFS) is the most common identifiable cause of open-angle glaucoma worldwide.

Population Tested: XFS glaucoma – XFG exfoliation present – no glaucoma

- 1. It is characterized by the production and progressive accumulation of fibrillar extracellular material in ocular tissue.**
- 2. XFS presents unilaterally in about two thirds of patients.**

3. XFS eyes are more likely to have glaucomatous damage than eyes without XFS, independent of IOP.

.The differences between both XFS and XFG fellow eyes and the normal control eyes approached significance.

.Significant differences were found between both XFS and XFG eyes and the normal control eyes.

.Differences were detected between both XFS and XFG to normal control eyes.

.No significant difference was found between XFS and XFG eye and fellow eye, nor was one found between XFS and XFG eyes.

.The study population was divided into three age-matched groups in their seventies.

.Normal control subjects had corrected visual acuities of 20/30 or better with no clinical evidence of XFS or XFG in both eyes.

.The non-exfoliated eye (fellow eye) of unilateral XFS and XFG patients had a corrected visual acuity of 20/30 or better with no clinical evidence of XFS or XFG.

.All participants had a corrected visual acuity of 20/30 or better in both eyes; the non-exfoliative eye (fellow eye) had no clinical evidence of XFS or XFG.

.The fellow eye of the XFG patients did not have clinically evident XFS.

.XFS/XFG eye and health eyes were compared using an area under the curve (AUC) analysis of the SDtvEP parameters.

.Short-duration transient VEP was able to detect differences between both XFG/XFS eyes and normal control eyes. We also found difference between the fellow eye of XFS/XFG and normal eyes. However, the difference was not

statistically significant. Further study with a larger number of patients is needed to confirm these preliminary findings.
.The study is basically informational and does not lead to any additional therapeutic measures.

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STUDY #3

BACKGROUND

Intraocular Pressure Changes in Subjects With and Without Glaucoma During Four Common Yoga Positions

.Single center prospective observational study

.10 glaucoma patients (9 female, mean age 62.3 + 15.6 yrs)

.10 healthy controls (8 female, mean age 36.3 + 12.8 yrs)

.YOGA POSITIONS: Adho mukha svanasana, uttanasana, halasana, and viparita karani tested in respective order.

.IOP was measured with a calibrated Reichert, Inc. Model 30 Pneumatometer seated, prior to position, immediately at the start of each position, after 2 minutes in each position, and immediately after assuming a sitting position.

.Subjects waited ten minutes for a final IOP and continued to the next position.

RESULTS

.IOP increased immediately assuming each position, with increase varying at the 2-minute measurement.

.Aside from the halasana position which reached borderline significance, there was no significant difference between

glaucomatous and healthy eyes regarding IOP response to position change.

.Glaucoma severity, based on visual field mean defect was associated with increased IOP response in all groups.

.Adho muka svanasana position was associated with the highest IOP increase. (P<0.01)

.Previous yoga studies have tested only the headstand position, but common yoga positions also increase IOP.

.All four positions showed a significant increase in IOP in all subjects, ranging from 20% to 73.7%.

.There were no significant differences between glaucomatous and healthy eyes among those who participated. The severity of the disease in patients was associated with the magnitude of IOP increase during all four positions.

.Yoga practitioners should be aware of the significant increase in IOP during these common positions, specifically glaucoma patients with severe disease.

References:

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ONGOING STUDIES:

.3D Tissue Culture XFS/XFG and Controls (Tenon, Iris Epithelium)

.miRNA and glycomics XFS/XFG, POAGm and Controls (Aqueous Humor, Plasma)

.Rho-Kinase Inhibitor for XFS/XFG, CACG, and Failed Filter

.Baerveldt Patch Graft 250mm versus 350mm plate comparison

.EDI-OCT pre- and post WDT for coefficient of elasticity for ICP

- .OSAS patients and early identification of RGC damage using SD-tvEP**
- .Fast versus Slow progressing glaucoma with 24 hour IOP an BP using CLS from Sensimed**
- .Unilateral XFG/XFS choroidal thickness and RMA**
- .ss-OCT for LC/RNFL defects**
- .Adaptive Optics imaging**
- .24 hour BP and importance of nocturnal MAP**

We want to thank Jessica Jasien for bringing this research to our attention and to extend a thank you to the other researchers involved in these studies and to especially thank Dr. Robert Ritch for his unvarying attention to finding a cure for glaucoma.

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Please note: The contents of this newsletter are for informational purposes only. The content is not intended to be a substitute for professional medical advice, diagnosis or treatment. Always seek the advice of your physician or other qualified health provider with any questions you may have regarding a medical condition.

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