

7-2008

Progressive optic neuropathy in congenital glaucoma associated with the Sirsasana yoga posture

Daniela S. Monteiro de Barros, MD; Sheila Bazzaz, MD
Wills Eye Institute, Jefferson Medical College, danismb1@yahoo.com.br

Moataz E. Gheith, MD
Wills Eye Institute, Jefferson Medical College

Ghada A. Siam, MD
Wills Eye Institute, Jefferson Medical College

Marlene R. Moster, MD
Wills Eye Institute, Jefferson Medical College

Let us know how access to this document benefits you

Follow this and additional works at: <http://jdc.jefferson.edu/willsfp>

 Part of the [Ophthalmology Commons](#)

Recommended Citation

Monteiro de Barros, MD; Sheila Bazzaz, MD, Daniela S.; Gheith, MD, Moataz E.; Siam, MD, Ghada A.; and Moster, MD, Marlene R., "Progressive optic neuropathy in congenital glaucoma associated with the Sirsasana yoga posture" (2008). *Wills Eye Institute Papers*. Paper 3.
<http://jdc.jefferson.edu/willsfp/3>

This Article is brought to you for free and open access by the Jefferson Digital Commons. The Jefferson Digital Commons is a service of Thomas Jefferson University's [Center for Teaching and Learning \(CTL\)](#). The Commons is a showcase for Jefferson books and journals, peer-reviewed scholarly publications, unique historical collections from the University archives, and teaching tools. The Jefferson Digital Commons allows researchers and interested readers anywhere in the world to learn about and keep up to date with Jefferson scholarship. This article has been accepted for inclusion in Wills Eye Institute Papers by an authorized administrator of the Jefferson Digital Commons. For more information, please contact: JeffersonDigitalCommons@jefferson.edu.

As submitted to:

***Ophthalmic surgery, lasers & imaging : the official journal of
the International Society for Imaging in the Eye***

And later published as:

**“Progressive optic neuropathy in congenital glaucoma
associated with the Sirsasana yoga posture”**

Volume 39, Issue 4, July 2008, Pages 339-340

DOI: 10.3928/15428877-20080701-03

Authors: Daniela S. Monteiro de Barros, MD; Sheila Bazzaz, MD;
Moataz E. Gheith, MD; Ghada A. Siam, MD;
Marlene R. Moster, MD

William and Anna Goldberg Glaucoma Service

Department of Glaucoma

Wills Eye Institute, Jefferson Medical College

840 Walnut Street, Suite 1150

Philadelphia, PA 19107

(215) 928-3342

(215) 928-3285

Correspondence: Daniela S. Monteiro de Barros, MD

danismbl@yahoo.com.br

The authors have no financial interest related to the article.

ABSTRACT

The authors describe a case report of progressive glaucomatous neuropathy in a patient with congenital glaucoma who routinely practiced the Sirsasana (Headstand) yoga position for several years. The ophthalmic examination included best-corrected visual acuity, anterior segment examination, indirect ophthalmoscopy, ultrasound pachymetry for central cornea thickness, and intraocular pressure (IOP) before, during and after 5 minutes of headstand yoga posture. The IOP increased significantly during the head-down position. Transient elevation in IOP during yoga exercises may lead to progressive glaucomatous optic neuropathy especially in susceptible patients with congenital glaucoma.

INTRODUCTION

Yoga exercises have increased in popularity as a part of an active lifestyle. In addition to physical fitness, yoga has been promoted as an alternative form of therapy for chronic

illnesses.ⁱ With the increasing utilization of these exercises, physicians need to be familiar with the potential side effects in patients with certain medical conditions.ⁱⁱ Recent studies have described an elevation in intraocular pressure following Sirsasana (headstand) yoga posture, particularly in patients with glaucomatous optic neuropathy.^{iii,iv} However, to the best of our knowledge there are no publications describing progressive glaucomatous neuropathy in congenital glaucoma associated with yoga exercises. We report a case of progressive glaucomatous optic neuropathy in a patient with a history of congenital glaucoma who has been performing the Sirsasana headstand posture during yoga exercises for the past 5 years.

CASE REPORT

A 47-year-old Caucasian female with a history of congenital glaucoma, presented with progressive optic neuropathy and decreased visual acuity in the left eye. She had undergone goniotomy in both eyes in the first year of life and filtration surgery on the left eye 17 years prior to presentation. She recently had cataract extraction on her left eye. Her best corrected visual acuity was 20/20 in the right and 20/80 in the left eye, with a refractive error of $-1.75 + 2.25 \times 160$ and $-2.00 + 2.75 \times 018$, respectively. By Goldmann applanation tonometry, the intraocular pressure was 13mmHg in the right and 24mmHg in the left eye. At presentation she was using Alphagan, Betimol, and Travatan in the left eye only. The examination was significant for mild corectopia of the left pupil with a trace afferent pupillary defect and buphthalmos of both eyes. The anterior segment examination was significant for Haab's striae, left greater right and a superior moderately

elevated avascular bleb in the left eye. The central corneal thickness was 486 μ in the right eye and 539 μ in the left eye, The IOP was unchanged after dilation in both eyes. The optic nerve showed a small healthy cup in the right eye and larger shallow cupping with a full healthy rim in the left eye.

There was evidence of progressive optic neuropathy and visual field defects in the left eye. The IOP was measured with the Tonopen XL before, during and after the headstand position. The patient's IOP rose significant from 13 mmHg before the headstand position to 35mmHg in the right eye and from 24 mmHg to 50mmHg in the left eye, during the headstand position. The intraocular pressure after the headstand position decreased to 18 mmHg. The patient would routinely continue this position for ten minutes approximately three times a week.

DISCUSSION

Yoga exercises have being advocated as a complementary and alternative medicine technique for various diseases in many countries.^v While these exercises are routinely safe and promote good health, there are risks involved for certain patients. Margo et al^{vi} reported that maintaining a headstand position may predispose patients to vascular thrombosis by intermittently increasing conjunctival venous pressure and decreasing venous outflow. Other more recent reports have been described an increase in intraocular pressure associated with yoga exercises.¹⁻⁴

In a prospective case observational series, Baskaran et alⁱⁱⁱ demonstrated a uniform 2-fold increase in the IOP during Sirsasana, which was maintained during the posture in all age groups irrespective of the ocular biometry and ultrasound pachymetry. Of significance, all seventy five subjects that were observed did not have a prior diagnosis of glaucoma or any glaucomatous optic neuropathy. Additionally, they concluded that normal patients performing the headstand posture do not need routine ocular examinations to monitor for glaucomatous damage. This study did not address how the elevation and fluctuation of IOP may affect patients with pre-existing glaucomatous optic neuropathy. In a similar presentation as our patient, Gallardo et al^{iv} reported a case of a patient with primary open angle glaucoma, splinter disc hemorrhage and progression of glaucomatous optic neuropathy in association with the Sirsasana headstand posture.

It is difficult to make a direct causal relationship between the headstand posture and glaucomatous progression, but in patients with pre-existing glaucomatous optic neuropathy, the dramatic change in intraocular pressure is potentially harmful. The sudden increase in pressure may cause ischemic as well as mechanical pressure related damage to the optic nerve fibers.

The rise in intraocular pressure that occurs during Sirsasana headstand posture has been documented in multiple studies, but further controlled studies in glaucoma patients are needed to make a direct correlation with progression of glaucomatous optic neuropathy. Regardless, it is an important consideration in patients with seemingly controlled IOP, but with worsening optic neuropathy. Additionally, the Sirsasana headstand posture

should be incorporated into the standard history questionnaire for all patients at risk for glaucoma.

References

-
- ⁱ Rice R, Allen RC. Yoga in glaucoma. *Am J Ophthalmol*. 1985;100(5):738-739.
- ⁱⁱ Fahmy JA, Fledelius H. Yoga-induced attacks of acute glaucoma. A case report. *Acta Ophthalmol*. 1973;51:80-84.
- ⁱⁱⁱ Baskaran M, Raman K, Ramani KK, et al. Intraocular pressure changes and ocular biometry during Sirsasana (headstand posture) in yoga practitioners. *Ophthalmology*. 2006;113:1327-1332.
- ^{iv} Gallardo MJ, Agarwal N, Cavanagh HD, Whitson JT. Progression of glaucoma associated with the Sirsasana (headstand) yoga posture. *Advances in therapy*. 2006;23:921-925.
- ^v Singh V, Raidoo DM, Harries CS. The prevalence, patterns of usage and people's attitude towards complementary and alternative medicine (CAM) among the Indian

community in Chatsworth, South Africa. *BMC Complement Altern Med* [serial online] 2004;4:3.

^{vi} Margo CE, Rowda J, Barletta J. Bilateral conjunctival varix thromboses associated with habitual headstanding. *Am J Ophthalmol*. 1992;113(6)726-727.