

EFFECTS OF ACUPUNCTURE ON PRIMARY OPEN ANGLE GLAUCOMA

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Background: Glaucoma is the second leading cause of irreversible blindness over the world due to optic neuropathies. Open angle glaucoma is more common and mostly affects African people. Over 8.4million of glaucoma patients are bilaterally blind rising to 11.1million by2020.
Purposes: The purposes of this study were designed to determine the therapeutic efficacy of acupuncture therapy on intraocular pressure and visual field in primary open angle glaucomatous patients.

Methods: Fifty one eyes with Primary open angle glaucoma participated in this study. Their age ranged from 40 to 80 years, IOP ranged from 20 to 45mmHg, these eyes were divided randomly into two groups;

Acupuncture group: This group consisted of twenty six eyes whose received acupuncture therapy and **Control group:** This group consisted of twenty five eyes whose did not receive any kind of acupuncture therapy. Both groups received their standard topical antiglaucoma medications.

Inclusive criteria:

These eyes were chosen under the following criteria:

- Patients of both sex with age from 40 to 80 years, as glaucoma is more common to begin after forty.
- All eyes were diagnosed with primary open angle glaucoma (POAG).
- Controlled blood glucose level for the patients. Intra ocular pressure ranged from 20 to 45mmHg.

Exclusive criteria:

The current study excluded the following eyes:

Eyes had an expert of laser trabeculoplasty, experiences of ocular surgery and inflammation on the eye within the past year were excluded from this study.



Procedures of the study

Evaluative procedures

IOP measurements using Goldman appplanation Tonometry before acupuncture therapy and post 2,4,6,8weeks with follow up after 3,4,5 and 6 months

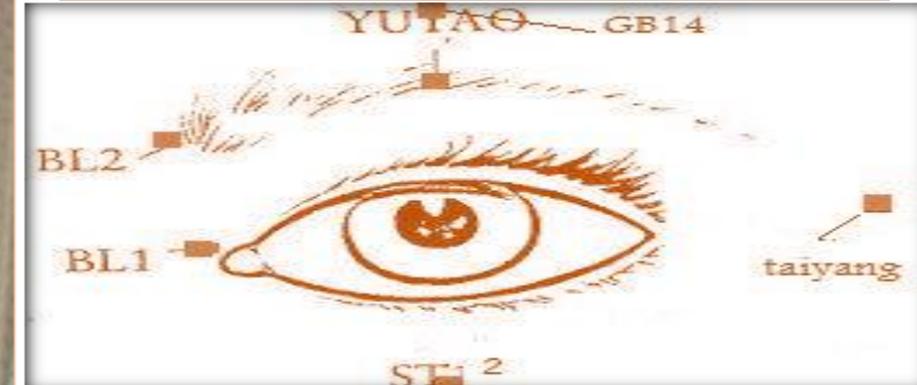
Visual field using Perimetry before acupuncture therapy and after 6 months.

Protocol of Acupuncture Therapy

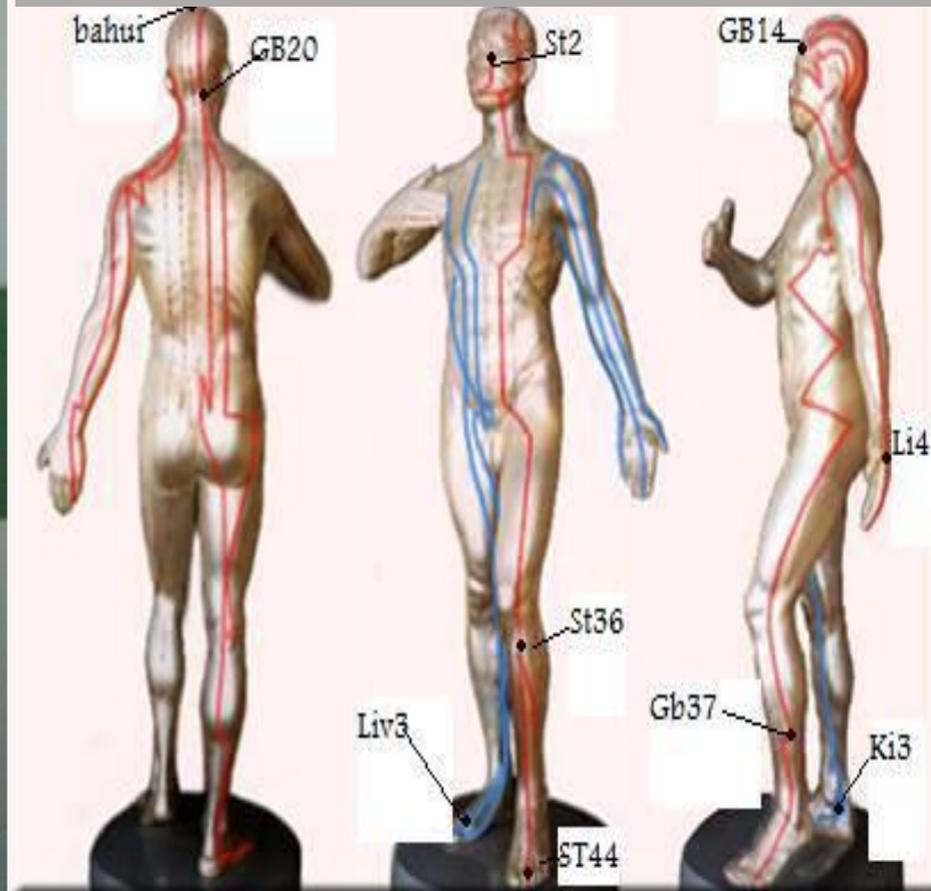
Acupoints stimulations using Sterilized disposable stainless steel acupuncture needles. Time of each session is 30 minutes repeated 3 sessions per week for 8 weeks (24 sessions)

ACUPUNCTURE POINTS FOR POAG

Location of local points around the eye

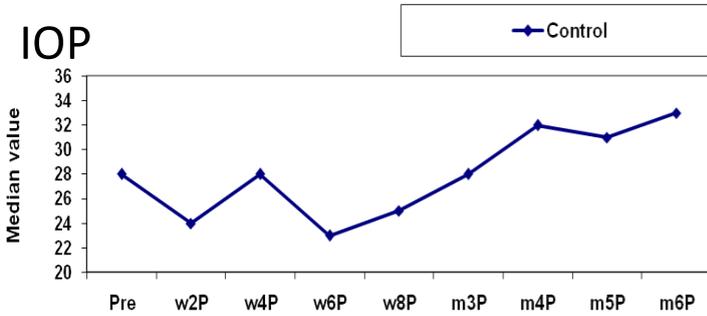


Location of distal points and their Meridian (adapted from Gongwang et al.,1997).

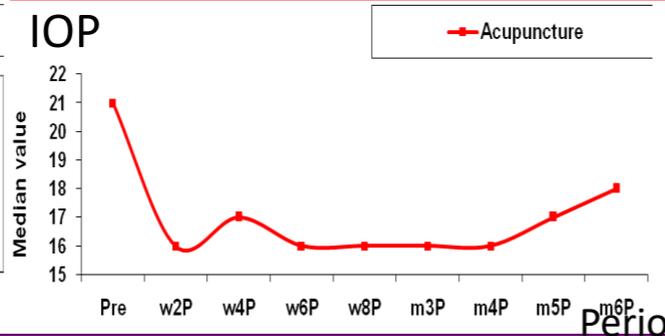


RESULTS

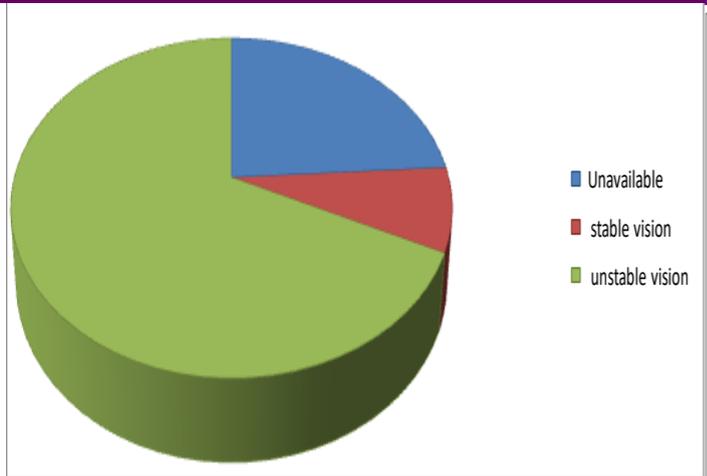
Median values of IOP at different times of measurements in control group.



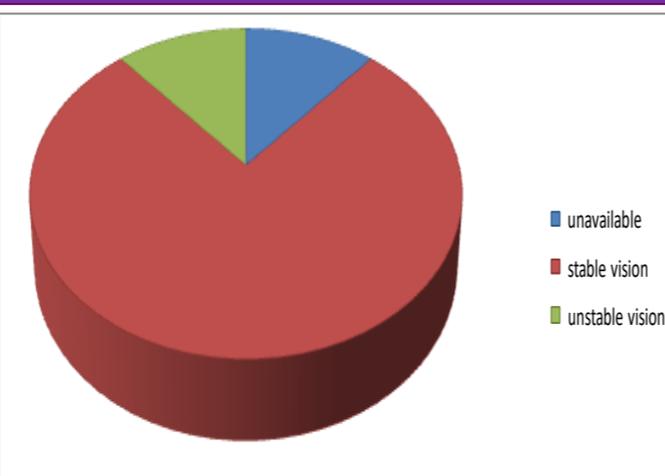
Median values of IOP at different times of measurements in acupuncture group.



Visual field changes for control group.



Visual field changes in acupuncture group.



DISCUSSION

This study was the first study investigated the effect of acupuncture in management of POAG for six months; in first two months all eyes in acupuncture group were under direct acupuncture effect and later four months were for follow up. Maximum improvement was after six acupuncture session's 28.076 ± 16.89 reduction of IOP, keeping IOP reduction ranged from 24.73 ± 13.28 to 27.76 ± 12.12 till the end of the fourth month then decrease 22.26 ± 11.32 at the end of the sixth month. The mean values of the acupuncture groups between pre assessment and followed times through the study were highly significant.

Two eyes recorded elevated IOP; one was blind with IOP more than 40mmHg. The other eye treated by corticosteroids eye drops recorded more increase of IOP through acupuncture course and follow up period.

Four eyes with cataract recorded maximum reduction of IOP after six sessions then elevation of IOP for the following records; as in eye number one, the pre assessment IOP was 27mmHg. reduced to 15mmHg. after six sessions but increased to 21mmHg. in the next records.

Many studies explained the acupuncture effects on ocular circulations and retinal nerve that supported the results of this study.

Takayama et al., 2011 studied the short term effect of acupuncture on open angle glaucoma in retrobulbar circulation as additional therapy to standard medication using color Doppler imaging before and after acupuncture and reported an increase of blood flow in the ophthalmic artery (OA), central retinal artery (CRA) and short posterior ciliary artery (SPCA) accompanied with reduction of IOP.

Nause et al., 2000 reported that chorioretinal blood flow was increased through relative parasympathetic reaction by stimulating an acupuncture point that acupuncture is a promising adjunctive therapy for ischemic ocular diseases.

A narrative overview of the available literature up to July 2012 summarizes reported evidence on the potential beneficial effects of sensory stimulation for glaucoma. Sensory stimulation appears to significantly enhance the pressure-lowering effect of orthodox treatments. Studies suggest that it may also improve blood flow to the eye and optic nerve head (Rom, 2013).

Pagani et al., 2006 revealed that daily sessions of low-frequency EA for 11 days to RCS rats during a critical developmental stage of retinal cell degeneration cause an increase of retinal nerve growth factor (NGF) and NGF high-affinity receptor (TrkA) expression; and increase of outer nuclear layer (ONL) thickness; and enhanced vascularization. These findings suggest the possible beneficial effects of EA treatment in the development of IRP-like retinal degeneration of RCS rats and that the mechanism through which EA might exerts its action on the regulation of NGF and brain-derived neurotrophic factor (BDNF) and/or their receptors in retinal cells.

Animal study for 30 rats investigated the effect of acupuncture on neuronal apoptosis after cerebral ischemia using electron microscope examination for cerebral cortex and hippocampal area. The results showed that acupuncture may play a certain role in protecting nerve through inhibiting ischemic neuronal apoptosis (Ju et al., 2007).

Conclusion: Within the limitation of the study the following could be compromised: Acupuncture therapy decreased IOP and stabilized visual field with stopping apoptosis of optic nerves for eyes with primary open angle glaucoma.