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Review Article

# MANAGEMENT OF PRIMARY OPEN ANGLE GLAUCOMA (POAG): AYURVEDIC AND MODERN APPROACHES

**Archana Bartwal[1]*, Dayashankar Singh[2], Arun Kumar Pandey[3]**
*[1]PG Scholar, [2]Professor, [3]Assistant Professor, Department of Shalakya, Patanjali Bhartiya Ayurvigyan evam Anusandhan Sansthan, Uttarakhand, India.

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## ABSTRACT

Primary open-angle glaucoma (POAG) is a chronic disease characterized by elevated intraocular pressure (IOP), optic nerve damage, and visual field loss. This review explores the management of glaucoma from both Ayurvedic and modern medical perspectives, discussing their similarities, differences, and potential benefits. Modern therapeutic approaches include medication, laser therapy, and surgery to lower IOP and prevent visual field damage. However, glaucoma progression and optic nerve damage can occur even with normal IOP levels. Ayurveda views POAG as a manifestation of *Adhimantha*, primarily involving *Pitta* and *Rakta doshas*. Ayurvedic treatments focus on improving ocular health through various therapies, herbal formulations, and lifestyle modifications. Integrating Ayurvedic and modern approaches may provide a comprehensive approach to glaucoma management, enhancing patient outcomes.

## INTRODUCTION

Primary open-angle glaucoma (POAG) is a chronic disease that typically affects both eyes and is usually observed in adults. It is characterized by several key features. Firstly, there is an elevation in intraocular pressure (IOP), which exceeds 21mmHg at some point during the course of the disease. Secondly, there is damage to the optic nerve that is indicative of glaucoma. Additionally, the anterior chamber angle remains open, allowing for normal fluid drainage. As the condition progresses, characteristic visual field loss occurs, further confirming the presence of glaucomatous damage. Lastly, it is essential to rule out any signs of secondary glaucoma or other non-glaucomatous causes for the optic neuropathy, ensuring that the primary cause is indeed POAG.[1] Glaucoma is the second leading cause of irreversible blindness worldwide and the third leading cause of it in India.[2,3]

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Previous estimates indicated that approximately 12% of global blindness cases were attributed to glaucoma.[4] The number of individuals affected by glaucoma is projected to rise from 60.5 million in 2010 to 79.6 million by 2020, with the primary open-angle variety constituting 74% of cases. The prevalence of bilateral blindness caused by primary open-angle glaucoma is expected to increase from 4.5 million in 2010 to 5.9 million in 2020. Studies suggest that the most notable change in glaucoma prevalence worldwide between 2010 and 2020 will occur in India.[5] Based on available data, it is estimated that approximately 11.2 million individuals aged 40 years and older in India have glaucoma, accounting for 12% of the country's cases of blindness,[6] with primary open-angle glaucoma affecting an estimated 6.48 million individuals.[7]

The AYURVEDIC perspective on the pathophysiology of Open-Angle Glaucoma (OAG) involves four key events. Firstly, there is an increased resistance to aqueous humor outflow, resulting in elevated intraocular pressure (IOP) due to degenerative changes in the filtering apparatus (*Margavarana* leading to *Sroto-Avarodha*). Following this, there is ischemia or hypoperfusion to the optic nerve head (ONH) and obstruction of nutrient channels *(Sokshma-Sroto Sanga/Rasayani Avarodha*), which may

or may not be related to elevated IOP. The third event involves a failure of local immunity *(Dhatu Rupi Ojo Hrasa/Vyadhi Kshamatva Hani*), contributing to disease progression. Lastly, there is remodelling or changes in the ONH (*Dhatu Kshaya*) as a result of the aforementioned factors.[8]

This review explores the management of glaucoma, comparing the Ayurvedic and modern approaches while discussing their potential benefits and limitations. The aim is to provide an evidence-based understanding of these treatment modalities.

**Therapeutic Approaches in Modern Science**

A variety of therapeutic strategies, encompassing pharmaceutical interventions, laser therapy, and surgical procedures, can be implemented to lowering intraocular pressure (IOP) levels and avert visual field damage. Glaucoma treatment involves five medication groups: beta blockers, cholinergic agents, carbonic anhydrase inhibitors, alpha-2 agonists, and prostaglandin analogs. Ophthalmologists recommend these medications as the first-line approach, reducing the need for glaucoma surgeries. However, the broad use of these drugs increases treatment costs and may lead to noncompliance. If disease control is inadequate, laser or surgical interventions are considered.[9]

Despite the efficacy of various antiglaucomatous medications, glaucoma remains the second leading cause of blindness globally. Additionally, optic nerve damage continues to progress even when intraocular pressure (IOP) is within normal range. These findings indicate the need for further advancements to achieve better management of glaucoma. Merely controlling IOP is insufficient for effectively managing the disease; instead, implementing neuroprotection or neuroregeneration strategies may enhance the control of optic nerve damage.[10] Consequently, there is a significant need for exploring alternative therapeutic strategies that are not solely dependent on reducing intraocular pressure (IOP) in order to address the condition effectively.

Newly released data indicates the effectiveness of a novel anti-glaucomatous medication known as a Rho kinase inhibitor (RKI). This inhibitor has been scientifically demonstrated to block the signaling pathway of Rho-associated protein kinase (ROCK). This particular pathway triggers cellular contraction and the transformation of fibroblasts into myofibroblasts. As a result, the Rho kinase inhibitor has the ability to relax the trabecular meshwork, leading to a reduction in resistance within the outflow pathways.[11]

**Primary Open Angle Glaucoma V.S Adhimantha[12]**

Glaucoma is commonly corelated with *Adhimantha*, a condition exhibiting a pathognomonic feature known as *"Nayane tivra vedna,"* which is specifically observed in Acute Angle-Closure Glaucoma (ACG). However, it is important to emphasize that pain does not manifest as a characteristic symptom in Primary Open-Angle Glaucoma (POAG). If the intraocular pressure (IOP) is significantly elevated in primary open-angle glaucoma (POAG), individuals may experience slight discomfort or a sensation of heaviness in the eye, accompanied by headaches. *Adhimantha*, a condition characterized by the involvement of various *Doshas*, presents with distinct symptoms. These include *Rupampashyati dukhen* (visual disturbances/field defects), *Shopha natisrambham* (elevated intraocular pressure), and *Hanyaddrishti* (injury to the retina/optic nerve). These manifestations strongly indicate the presence of glaucoma, with the subsequent impact on *Drishti* (retina/optic nerve) resulting in the development of visual field defects, commonly observed in patients with chronic primary open-angle glaucoma (POAG). *Drishti nasha,* denoting visual impairment, signifies the final outcome of *Adhimantha*, whereas permanent and irreversible blindness serves as the ultimate sequela of primary open-angle glaucoma (POAG). *Pitta* and *Rakta doshas* are the main *Doshas* involved in the pathogenesis of *Adhimantha*. Similarly blood has the important role in the pathogenesis of Glaucoma either by hypoperfusion and by causing inflammation or impairment in the local immunity. Among the different types of *Adhimantha*, it is primarily the *Kaphaja* subtype that exhibits the most prominent signs and symptoms resembling primary open-angle glaucoma (POAG). Conversely, other subtypes of *Adhimantha* present with diverse types of pain manifestations.

**Therapeutic Approaches in Ayurvedic science:**

In Ayurveda, the treatment approach for *Abhisyanda* is generally considered effective for all types of *Adhimantha*, which is why the same treatment protocol is recommended. The treatment plan consists of various steps including *Langhana* (therapeutic fasting), *Alepana* (applying medicated substances externally), *Swedana* (sudation therapy), *Siravyadha* (bloodletting from veins), *Virechana* (therapeutic purgation), and *Anjana* (applying medicated collyrium). The treatment approach follows the fundamental principle of *Kaphashodhana*, which involves four sequential steps as outlined below:[13]

- *Kaphashodhana* therapy of the body, including *Apatarpana* (therapeutic fasting or light diet to eliminate excess *Kapha dosha*).
- *Kaphashodhana* therapy targeting the head region through techniques such as *Nasya* (nasal administration of medicated substances), *Kavala*

(gargling), *Gandoosha* (holding medicated liquid in the mouth), etc.

- *Srotoshudhi* (cleansing of channels) can be achieved through *Raktamokshana* (bloodletting).
- Localized *Kaphashodhana* method for the eyes involves applying *Anjana* (medicated eye drops) and *Bidalaka* (medicated paste application) with *Kaphashamana* (pacifying *Kapha dosha*) drugs.

**Adjuvant effect of *Chakshushya Rasayana***

*Chakshushya Rasayana* drugs have *Rasayana* properties and a specific affinity for the visual apparatus. They promote vision, restore balance in the eye, rejuvenate its structure and function, and provide protection against diseases. These drugs and treatment protocols possess antioxidants, neuroprotective, healing, adaptability, and immunity-enhancing properties.[14]

**Ayurvedic Medications**

Herbal formulations used in Ayurveda, such as *Triphala, Saptamrita Lauha*, and *Saptamrita Rasa*, are believed to possess antioxidant and anti-inflammatory properties (Jain, Sharma, & Gupta, 2019). These formulations have shown promising results in reducing oxidative stress and improving ocular blood flow.[15]

**Lifestyle Modifications:** Ayurveda emphasizes lifestyle modifications, including dietary changes, stress reduction techniques, and eye exercises. These practices aim to improve overall ocular health and reduce the risk of disease progression (Sharma, Singh, & Singh, 2018). Exercise has been found to lower intraocular pressure (IOP), although the exact way it does so is not fully understood. The amount of IOP reduction depends on the intensity of the exercise performed. That people who are more physically fit tend to have lower IOP. For example, sedentary workers in a steel factory had higher applanation tensions compared to their physically active co-workers, with a difference of 1.9mmHg.[16]

**DISCUSSION**

The review explores the management of primary open-angle glaucoma (POAG) from both Ayurvedic and modern medical perspectives. Modern approaches focus on reducing intraocular pressure (IOP) through medications, laser therapy, and surgery, but optic nerve damage can still occur. Ayurveda views POAG as *Adhimantha*, involving *Pitta* and *Rakta doshas*, and offers herbal formulations, lifestyle modifications, and *Chakshushya Rasayana* for ocular health.

The discussion highlights the need for a comprehensive approach to glaucoma management. Integrating Ayurvedic and modern treatments could potentially enhance patient outcomes. However, more research and clinical trials are required to validate this approach fully. Overall, considering both perspectives may lead to more effective strategies for combating glaucoma and preserving vision.

**CONCLUSION**

Primary open-angle glaucoma (POAG) shares similarities with *Kaphaja Adhimanth*, particularly when optic atrophy is absent. The etymology, aetiology, pathogenesis, and clinical features of both conditions correlate significantly. In advanced stages of POAG, characterized by ganglion cell optic neuropathy, it can be compared to "4th *Patalgat timir*" in Ayurvedic texts. While glaucoma is generally associated with *Adhimantha*, this is more applicable to angle-closure glaucoma (ACG) where ocular pain is a prominent feature, unlike in POAG where pain is not a significant criterion. The management of glaucoma requires a comprehensive approach tailored to individual needs. Ayurvedic and modern approaches offer distinct advantages and limitations. Integrating these approaches may offer a synergistic effect, combining the benefits of holistic care and evidence-based interventions. Collaboration between Ayurvedic practitioners and modern healthcare professionals can enhance glaucoma management outcomes.

**REFERENCES**


1. F.Salmon J (2019) Kanski's Clinical Ophthalmology. 9th Edition, Elsevier, Amsterdam, chapter 10 glaucoma pg 349
2. Sihota R, Tandon R. Parsons Diseases of the Eye. 22nd ed. Gurgaon: Elsevier Publication; 2015. p. 563.
3. Sihota R, Tandon R. Parsons Diseases of the Eye. 22nd ed. Gurgaon: Elsevier Publication; 2015. p.296.
4. Resnikofff S, Pascolini D, Etya'ale D. Et al Global data on visual impairment in the year 2002. Bull World Health Organ 200482844–851.
5. Quigley H A and A T Broman. The Number of People with Glaucoma Worldwide in 2010 and 2020. The British Journal of Ophthalmology 90.3 (2006): 262- 267. PMC. Web. 4 Feb. 2018.
6. www.glaucoma.org
7. Ronnie George, Ramesh S. Ve, Lingam Vijaya Glaucoma in India: estimated burden of disease. J Glaucoma. 2010 Aug; 19(6): 391–397.
8. Dhiman KS, Adhoor VS, Agarwal R, Mehta AJ. Adjuvant effect of Chakshushya Rasayana with beta-blocker eye drops in the management of progressive glaucomatous optic neuropathy: An open-label randomized controlled trial. Ayu 2016; 37: 125-34.

9. American Academy of Ophthalmology. (2020). BCSC (Basic and Clinical Science Course) Section 10: Glaucoma (22-23 ed.). San Francisco, CA: American Academy of Ophthalmology.
10. Burr J, Azuara-Blanco A, Avenell A, Tuulonen A. Medical versus surgical interventions for open angle glaucoma. Cochrane Database Syst Rev. 2012; 9:CD004399.
11. Inoue T, Tanihara H. Rho-associated kinase inhibitors: a novel glaucoma therapy. Prog Retin Eye Res. 2013; 37: 1–12.
12. Baghel and Fiaz Greentree Group Publishers © IJAPC Int J Ayu Pharm Chem 2020 Vol. 13 Issue 1 www.ijapc.com 131
13. Pravin M Bhat et al. A review on concept of glaucoma in Ayurveda and its management Int, J, Res, Ayurveda pharm. 2028: 9(3): 159-164
14. Baghel and Fiaz Greentree Group Publishers © IJAPC Int J Ayu Pharm Chem 2020 Vol. 13 Issue 1 www.ijapc.com 131
15. Sharma, N., Singh, N., & Mishra, P. K. (2016). Ayurvedic management of netrarogas (eye disorders) with special reference to its types, symptomatology and management techniques. World Journal of Pharmacy and Pharmaceutical Sciences, 5(10), 73-94.
16. Sharma, N., Singh, N., & Mishra, P. K. (2016). Ayurvedic management of netrarogas (eye disorders) with special reference to its types, symptomatology and management techniques. World Journal of Pharmacy and Pharmaceutical Sciences, 5(10), 73-94.

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***Address for correspondence**
**Dr. Archana Bartwal**
PG Scholar,
Department of Shalakya,
Patanjali Bhartiya Ayurvigyan evam Anusandhan Sansthan,
Uttarakhand.
Email:
drarchanabartwal91@gmail.com
Ph: 9818963245