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Access this article online
Website: www.ayujournal.org
DOI: 10.4103/0974-8520.100323
Quick Response Code:

Clinical Research

A comparative study of *Bilvadi Yoga Ashchyotana* and eye drops in *Vataja Abhishyanda* (Simple Allergic Conjunctivitis)

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Abstract

Simple allergic conjunctivitis is the most common form of ocular allergy (prevalence 5 – 22 %). It is a hypersensitivity reaction to specific airborne antigens. The disease *Vataja Abhishyanda, which* is due to vitiation of *Vata Pradhana Tridosha* is comparable with this condition. The management of simple allergic conjunctivitis in modern ophthalmology is very expensive and it should be followed lifelong and Ayurveda can provide better relief in such manifestation. This is the first research study on *Vataja Abhishyanda.* Patients were selected from the Outpatient Department (OPD), Inpatient Department (IPD), of the Shalakya Tantra Department and were randomly divided into two groups. In Group-A *Bilvadi Ashchyotana* and in Group-B *Bilvadi* eye drops were instilled for three months. Total 32 patients were registered and 27 patients completed the course of treatment. *Bilvadi Ashchyotana* gave better results in *Toda, Sangharsha, Parushya, Kandu* and *Ragata* as compared with *Bilvadi* Eye Drops in *Vataja Abhishyanda.*

Key words: *Ashchyotana*, eye drops, simple allergic conjunctivitis, *Vataja Abhishyanda*

Introduction

Abhishyanda is the root cause of almost all the eye disorders and must be treated as soon as possible, otherwise its complications will become severe and difficult to save the eye sight.[1-4] If *Abhishyanda* takes a chronic course it may lead to *Vataja Adhimantha, Hatadimantha, Akshipakatyaya, Avranashukla,* and so on.[1]

Vataja Abhishyanda is characterized by *Toda* (Pricking pain), *Sangharsha* (foreign body sensation), *Achchashruta* (watery discharge), *Alpa Shopha* (mild chemosis), *Vishushka Bhava* (feeling of dryness), *Parushya* (dryness),[5] and so on, which are very similar to most of the signs and symptoms of Simple Allergic Conjunctivitis. Based on the similarities of signs and symptoms, *Vataja Abhishyanda* can be co-related with Simple Allergic Conjunctivitis. The prevalence is 5 – 22% in the general population and recurrence found in 41 – 62% of the cases.[6,7]

Simple allergic conjunctivitis is the most common form of ocular allergy. It is a hypersensitivity reaction to specific airborne antigens.[8] Basically it is an urticarial reaction.[6] Although serious sequels as a result of corneal involvement are rare, the distressing signs and symptoms may cause extreme discomfort to the patients, it can disturb the patient's routine life.[9] Jamnagar and the surrounding areas are famous for industrial pollution and a good number of patients with simple allergic conjunctivitis are being reported to the OPD of the Shalakya Tantra Department, I.P.G.T. and R.A., Jamnagar.

Drugs have multiple pharmacological mechanisms of actions, such as — histamine H1 receptor antagonists, mast cell stabilizers, inhibit infiltration, activation and degranulation of eosinophils, and other late phase reactions, such as, the effect of platelet activating factors, which are useful in the treatment of simple allergic conjunctivitis.[10] There are expensive, may settle in developing ADRs and possibilities of relapses are also present.

Moreover these drugs are to be used lifelong to keep the condition under control. Hence, there is scope to search for a better remedy from the rich heritage of ophthalmic preparations available in Ayurveda.

Among various formulations prescribed for the treatment of *Vataja Abhishyanda* by different *Acharyas, Bilvadi Yoga,*[11] which is indicated in the treatment of *Vataja Abhishyanda* has been selected. All the ingredients [*Bilva* (*Aegle marmelos* Corr.), *Agnimantha* (*Clerodendrum phlomidis* Linn.), *Aralu* (*Ailanthus excelsa* Roxb.), *Patala* (*Stereospermum suaveolens* DC.), *Gambhari* (*Gmelina arborea* Linn), *Eranda* (*Ricinus communis* Linn), *Brihati* (*Solanum indicum* Linn.) and *Madhu Shigru* (*Morianga olifera*)] have the *Vata Shamaka* effect. Moreover all the ingredients are known for their anti-inflammatory and antibacterial activities.[12-19]

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However, *Ashchyotana* is the foremost procedure indicated in all ocular ailments.[20] Nevertheless, due to certain limitations, like being a time consuming procedure, dose variation, and the chance of due to non compliance of aseptic precautions, the *Ashchyotana* procedure is not much in practice.

Eye drops is the most common form in ophthalmic practice, because the standard dose of the eye drops is maintained and patients can easily carry it with them and instill it whenever required. Considering this, eye drop formulation has been choosen as an alternative to *Ashchyotana Kriya Kalpa*.

Looking in to all these, a study is planned to evaluate the comparative efficacy of *Bilvadi Yoga* as *Ashchyotana* and eye drops.

Aims and objectives

The present study has been undertaken with the following aim and objective:

To evaluate the comparative efficacy of *Bilvadi Aschyotana* and *Bilvadi* eye drops in the patients of *Vataja Abhishyanda*.

Material and Methods

Source of data: Patients with *Vataja Abhishyanda*, fulfilling the inclusion criteria attending the OPD of the Shalakya Tantra Department of I.P.G.T. and R.A., G.A.U., Jamnagar. A detailed research proforma was prepared as per the modern and Ayurvedic points. After taking ophthalmic and systemic history, a detailed conjunctival examination was carried out by torch light and slit lamp, before and after the treatment.

Preparation of drug

The trial drug, *Bilvadi Yoga* was used in two methods, (The traditional method of *Ashchyotana* and the modified method of eye drops). For *Ashchyotana*, *Yavakuta Churna* was prepared in the Pharmacy, Gujarat Ayurved University, and *Kwatha* was prepared. For the eye drop formulation, the distillation process was carried out in the Pharmaceutical Chemistry Laboratory, I.P.G.T. and R.A., packed in sterile containers by taking aseptic precautions at Indiana Ophathalmic, Surendranagar.

Inclusion criteria

- Age in between 16 – 60 years
- Patients with signs and symptoms of *Vataja Abhishyanda*.

Exclusion criteria

- Age less than 16 and more than 60 years
- Patients with any other ocular pathology like Bacterial conjunctivitis corneal opacity, etc.

The study was approved by Institutional Ethics Committee. Written consent was taken from the patients.

Investigations

Routine hematological, urine (routine and microscopic), random blood sugar, and serum cholesterol were done to rule out associated systemic pathology. Absolute Eosinophil Count was carried out before and after treatment to identify the status of eosinophils in the blood. Conjunctival smear examination was carried out (10 patients: Group A-7 patients, Group B-3 patients), in which Leishman's Stain was used to differentiate the white cells — especially Eosinophils and Neutrophils, and Gram Stain was used for confirmation of allergic origin.

Grouping

- Group A: Ten drops of *Bilvadi Yoga Ashchyotana* was instilled thrice a day for three months.
- Group B: One drop of *Bilvadi* eye drops was instilled thrice a day for three months.

The assessment of *Bilvadi Ashchyotana* and eye drops on *Vataja Abhishyanda*, was done by subjective and objective parameters.

- Subjective parameters: It was assessed by relief in the signs and symptoms of the *Vataja Abhishyanda*.
- Objective parameters: It was assessed by decrease in Absolute Eosinophil Count (AEC) and decrease in the number of eosinophils and neutrophils in the conjunctival smear examination.

For feasibility of statistical analysis, according to the severity of the symptoms, a score was given individually for all subjective symptoms and signs from 0–4.

The obtained data was subjected to statistical analysis in terms of mean, standard deviation, and standard error with the help of unpaired 't' test and paired 't' test.

Observations and Results

It was observed that, 31.25% patients were from the age group of 21-30 years, 65.62% were female, 81.25% were from Hindu community, 37.25% were house wives, 28.12% were graduates, 75% were married, 40.62% were from upper middle class, 90.62% from urban area, 78.12% are vegetarian, 71.87% were addicted to tea/coffee and 40.62% patients have *Ruksha - Sheeta Sparsha* [Table 1].

All patients (100%) had *Kandu*, *Achchhashruta*, *Ragata*, and *Toda*, while 81.25% of the patients have *Alpa Shopha*, 71.87% of the patients had *Sangharsha*, 62.50% of the patients had *Shishirashruta* and *Alpa Dushika*, 46.87% of the patients had *Vishushkabhava*, 43.75% of the patients had *Parushya*, and 37.50% of the patients had *Shushka Dushika*, while 09.37% of the patients had *Nimeshonmeshana Krichchhrata*. The 43.75% patients had *Shirobhitapa* as an associated symptom [Table 2].

Table 1: General observation of the patients

General observation	Maximum	Percentage (%)
Age group	21 to 30 years	31.25
Sex	Female	65.62
Religion	Hindus	81.25
Occupation	Housewives	37.25
Education	Graduate	28.12
Marital status	Married	75.00
Socioeconomical status	Upper middle class	40.62
Habitat	Urban	90.62
Diet	Vegetarian	78.12
Addiction	Tea / Coffee	71.87
Twak Sparsha	*Ruksha-Sheeta Sparsha*	40.62

In the present study 28.12% patients had a history of allergic rhinitis and 15.62% patients had dandruff on the scalp. Chronicity of 6 to 12 months was noticed in 40.62% patients, recurrent history of conjunctivitis was noted in 65.62% patients. Dust and smoke reported as the aggravating factor in 65.62% patients [Table 3].

Effect of therapy

In Group A statistically significant relief was observed in *Toda* (pricking pain) (82.10%, < 001), *Sangharsha* (foreign body sensation) (77.00%, < 0.001), *Parushya* (dryness) (100%, < 0.01), *Vishushkabhava* (feeling of dryness) (78.00%, < 0.01), *Shishirashruta* (cold lacrimation) (64.00%, < 0.001), *Achchhashruta* (clean / watery discharge) (73.00%, < 0.001), *Alpa Shopha* (mild chemosis) (64.00%, < 0.001), *Shushka Dushika* (dry discharge) (75.00%, < 0.01), *Alpa Dushika* (scanty discharge) (70.00%, < 0.01), *Ragata* (congestion) (72.00%, < 0.001), and *Kandu* (itching) (78.00%, < 0.001). In associated symptom, statistically significant results were observed in *Shirobhitapa* (66.70%, < 0.001) and *Nasanaha* (80.00%, < 0.01). Statistically significant results were observed in AEC (33.80%, < 0.01) [Table 4].

In Group B (*Bilvadi* eye drops) statistically significant results were observed in *Toda* (68.00%, < 0.001), *Sangharsha* (33.00%, < 0.05), *Parushya* (88.00%, < 0.001), *Vishushkabhava* (71.00%, < 0.01), *Shishirashruta* (60.00%, < 0.01), *Achchhashruta* (78.00%, < 0.001), *Alpa Shopha* (86.00%, < 0.01), *Shushka Dushika* (80.00%, < 0.001), *Alpa Dushika* (81.00%, < 0.001), *Ragata* (65.00%, < 0.001), *Kandu* (71.00%, < 0.001), and in associated complaints like *Shirobhitapa* (77.80%, < 0.01) and *Nasanaha* (67.00%, < 0.05). Statistically significant results were observed in AEC (30.40%, < 0.02) [Table 4].

Effect of therapies on conjunctival smear

The eosinophils of the right eye were reduced by 66.70% (< 0.001) and the neutrophils of the right eye were reduced by 44.00% (< 0.05); the eosinophils of the left eye were reduced by 56.00% (< 0.05) and neutrophils of the left eye were reduced by 43.00% (< 0.05). All the results were statistically significant [Table 4].

In both the groups none of the patients were cured or remained unchanged. In Group A marked improvement was observed in 42.85%, moderate improvement in 50.00%, and mild improvement in 07.14% of the patients. In Group B marked improvement was observed in 23.07%, moderate improvement in 76.92%, and mild improvement in 07.14% of the patients [Table 5].

Discussion

Highly polluted environment, has an effect on lifestyle. Simple allergic conjunctivitis is one of the outcomes of this changing lifestyle, food habits, and polluted environment.

Simple allergic conjunctivitis has an equal distribution, more or less, throughout the world, without any exception to the developed and under-developed countries.[7]

Probable mode of action of *Bilvadi Ashchyotana* and *Bilvadi* eye drops

According to *Ayurveda* the instilled medicine will penetrate into the *Akshikosha Srotas*, *Shira Srotas*, *Ghrana Srotas*, and *Mukha Srotas* of the *Urdhvanga Bhaga* and remove the *Mala* present there.[21] This happens because of the basic properties of *Bilvadi Yoga*, that is, *Vata Shamaka*, *Vedana Sthapana*, *Vrana Ropana*, and *Ushna Virya*.

Pharmacokinetics of *Bilvadi Ashchyotana* and *Bilvadi* eye drops

Most of the ophthalmic medications are formulated to be applied topically. The classical pharmacokinetic theory based on the studies of systemically administered drugs does not fully apply to

Table 3: Details related to the disease *Vataja Abhishyanda*

Details	Particulars (Maximum)	Percentage
H/O other allergy	Allergic Rhinitis	28.12
H/O dandruff	Dandruff on scalp	15.62
Chronicity	6 to 12 months	40.62
Nature of the disease	Recurrent and relapsing	65.62
Aggravating factor	Dust and smoke	65.62

Table 2: Chief and associated complaints of the patients in brief

Chief complaints	No. of patients		Total	Percentage
	Group A	Group B		
Kandu	16	16	32	100
Toda	16	16	32	100
Achchhashruta	16	16	32	100
Ragata	16	16	32	100
Alpa Shopha	15	11	26	81.25
Sangharsha	13	10	23	71.87
Alpa Dushika	8	12	20	62.50
Shishirashruta	11	09	20	62.50
Vishushkabhava	09	06	15	46.87
Parushya	06	08	14	43.75
Shushka Dushika	05	07	12	37.50
Nimeshonmeshna Krichchhrata	02	01	03	09.37
Shirobhitapa (Associated symptom)	09	05	14	43.75

Table 4: The effect of therapy on various clinical symptoms, AEC, and conjunctival smear examination

Clinical symptoms, AEC	Relieved after therapy (in percentage)			
	Group A		Group B	
	%	*P*	%	*P*
Toda	82.10	< 0.001	68.00	< 0.001
Sangharsha	77.00	< 0.001	33.00	< 0.05
Parushya	100.00	< 0.01	88.00	< 0.001
Vishushkabhav	78.00	< 0.01	71.00	< 0.01
Shishirashruta	64.00	< 0.001	60.00	< 0.01
Achchashruta	73.00	< 0.001	78.00	< 0.001
Alpa Shopha	64.00	< 0.001	86.00	< 0.01
Shushka Dushika	75.00	< 0.01	80.00	< 0.001
Alpa Dushika	70.00	< 0.01	81.00	< 0.001
Ragata	72.00	< 0.001	65.00	< 0.001
Kandu	78.00	< 0.001	71.00	< 0.001
Shirobhitapa	66.70	< 0.001	77.80	< 0.01
Nasanaha	80.00	< 0.01	67.00	< 0.05
AEC	33.80	< 0.01	30.40	< 0.02
Conjunctival smear examination	**Effect of both of therapies**			
	In right eye		In left eye	
	%	*P*	%	*P*
Eosinophils	66.70	<0.001	56.00	< 0.05
Neutrophils	44.00	<0.05	43.00	< 0.05

AEC - Absolute Eosinophil Count

Table 5: Overall effect of therapies on 27 patients of *Vataja Abhishyanda*

Overall effect	Group A		Group B	
	No. of patients	%	No. of patients	%
Cured	00	00.00	00	00.00
Marked improvement	06	42.85	03	23.07
Moderate improvement	07	50.00	10	76.92
Mild improvement	01	07.14	00	07.14
Unchanged	00	00.00	00	00.00

all ophthalmic drugs. However, similar principles of absorption, distribution, metabolism, and excretion are applicable to the drug disposition in the eye.[22] Possible absorption pathways of an ophthalmic drug, following the topical application to the eye, are shown schematically in Figure 1.

After absorption, *Bilvadi Ashchyotana* and *Bilvadi* eye drops may undergo systemic distribution primarily by nasal mucosa absorption and possibly by local ocular distribution by transcorneal / transconjunctival absorption, and metabolism by various enzymes.

Hence, after instillation of *Bilvadi Ashchyotana* and *Bilvadi* eye drops, these fluids undergo absorption, distribution, and metabolism. Thus, the effect of *Bilvadi Ashchyotana* and *Bilvadi* eye drops are local as well as systemic.

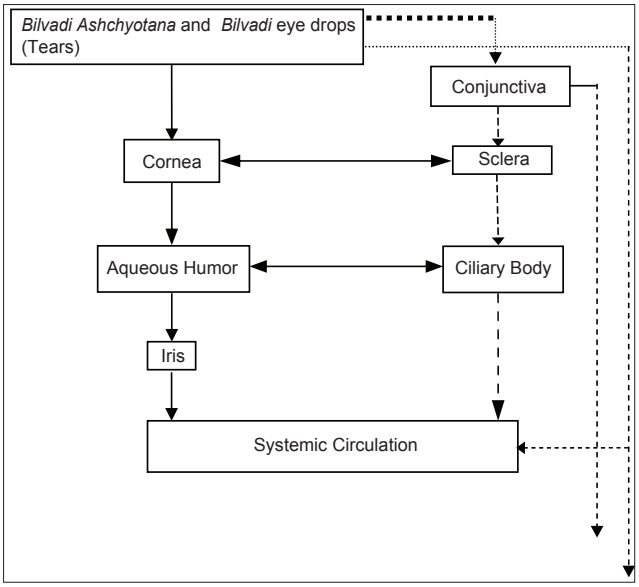

Figure 1: Possible absorption pathways of an ophthalmic drug following topical application to the eye (Solid black arrows represent the corneal route, dashed black arrows represent the conjunctival / scleral route)

Conclusion

Among all the *Nidana* of *Netra Roga*, *Raja Sevana*, *Dhuma Sevana*, and *Ritu Viparyaya* can be considered as specific *Nidana* for *Vataja Abhishyanda*.

Among all the symptoms of *Vataja Abhishyanda*, *Toda* can be correlated with pricking pain, *Achchhashruta* can with watery discharge, and *Sangharsha* with foreign body sensation in simple allergic conjunctivitis.

Bilvadi Ashchyotana gives better results in the symptoms of

Toda, *Sangharsha*, *Parushya*, *Kandu* and *Ragata* in *Vataja Abhishyanda*.

Bilvadi Ashchyotana and *Bilvadi* eye drops give significant results in all the symptoms like, *Toda*, *Sangharsha*, *Kandu*, *Achchashruta*, *Parushya*, *Vishushakabhava*, *Shishirasruta*, *Alpa Shopha*, *Shushka Dushika*, *Alpa Dushika*, *Ragata*, and the absolute eosinophils counts of *Vataja Abhishyanda*.

Although the *Ashchyotana* formulation is time consuming procedure for today's busy lifestyle; yet it is more effective than the eye drops.

This study has established the significant effect of *Bilvadi Ashchyotana* in clinical symptoms of *Vataja Abhishyanda*.The results obtained in *Bilvadi* eye drops are also encouraging. Thus, in patients who cannot come for the *Ashchyotana* procedure, eye drops can be an alternative treatment modality.

No adverse effects were found during the study in both the groups.

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हिन्दी सारांश

वातज अभिष्यंद–सिंपल एलर्जिक कन्जन्क्टिवायटीस पर आश्चयोतन एवं आई ड्रोप्स का तुलनात्मक अध्ययन

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एलर्जीजन्य नेत्ररोगों में सिंपल एलर्जीक कन्जन्क्टिवायटीस (५–२२%) सबसे अधिक पाया जाता है, जो कि वायु में रहनेवाले विशिष्ट एन्टीजन से होनेवाली हायपरसेन्सीटीव प्रतिक्रिया है । वातज अभिष्यंद, वातप्रधान त्रिदोषज व्याधि है । एलर्जिक कन्जन्क्टिवायटीस की आधुनिक चिकित्सा काफी महंगी है । और उसका जीवन पर्यन्त अनुसरण करना पड़ता है । जामनगर में वातज अभिष्यंद–सिंपल एलर्जीक कन्जन्क्टिवायटीस पर यह प्रथम शोधकार्य है । इस चिकित्सीय अध्ययन में शालाक्य विभाग के बहिरंग एवं अन्तरंग विभाग से रोगियों का चयन किया गया एवं उन्हें दो वर्गो में विभाजित किया गया । वर्ग 'ए' में बिल्वादि आश्चोतन १० ड्रोप्स की मात्रा में दिन में तीन बार तीन माह हेतु एवं वर्ग 'बी' में बिल्वादि आईड्रोप्स एक बूंद की मात्रा में दिन में तीन बार तीन माह हेतु नेत्र में डाला गया । कुल पंजीकृत ३२ रोगियों में से २७ ने चिकित्सा पूर्ण की । वातज अभिष्यंद – सिंपल एलर्जीक कन्जन्क्टिवायटीस में बिल्वादि आश्चोतन द्वारा बिल्वादि चिकित्सा नेत्र बिन्दु की तुलना में तोद्, संघर्ष, पारूष्य, राग, कंडू लक्षणों में अधिक लाभ प्राप्त हुआ ।