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A case study on the *Ayurvedic* management of Sixth (Abducens) Nerve Palsy

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ABSTRACT

Abducens nerve (sixth cranial nerve) supplies the lateral rectus muscle of the eye. Abduction of the eye is carried out by the contraction of the lateral rectus muscle. The sixth cranial nerve palsy is a nonspecific sign of increased intracranial pressure and typically resolves following normalization of the intracranial pressure. Most of the patients with sixth nerve palsies experience diplopia. In the conventional practice, this phase is best managed by patching the paretic eye or by frosting a spectacle lens. As per *Ayurveda*, diplopia is told under *Dwitiya Patalgata Timira* by *Acharya Vagbhata*, whereas *Acharya Sushruta* has included diplopia under *Tritiya Patalgata Timira*. **Case:** A 32 year old female patient came to the *Shalakya Tantra* OPD of SJIIM, Bengaluru with complaints of difficulty in turning right eye away from nose i.e., crossing of eye inward towards nose; headache was constant over right frontal and retroorbital area since 3days with no history of diabetes mellitus and hypertension. She approached to an ophthalmologist and was advised for treatment modalities like occlusion of the eye or using prisms until the diplopia subsides, botulinum toxin injections. As the patient was uncomfortable for undertaking conventional method of treatment hence came to an Ayurvedic hospital to undergo treatment. **Conclusion:** Isolated 6th nerve palsy and its *Ayurvedic* management has provided satisfactory results and provided relief from the symptoms.

Key words: *Sixth Nerve Palsy, Diplopia, Abducens Nerve, Timira.*

INTRODUCTION

Sixth cranial nerve palsy refers to paralytic strabismus (ocular deviation) resulting from complete or incomplete paralysis of the lateral rectus muscle of the eye.[1] The history consists of binocular uncrossed diplopia, worse in the direction of the lesion and worse at distance than near. 6th Abducent Nerve supplies to lateral rectus muscle.[2]

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The sixth nerve innervates the ipsilateral lateral rectus muscle and produces abduction. Damage to the sixth nerve produces an esotropia that is worse in the field of action of the involved sixth nerve and greater at distance than near. Most patients are able to fuse with a face turn toward the side of the palsy (gaze away from the palsy). The pupil is not affected. Patients who have long-standing sixth nerve palsies can develop tightening and contracture of the medial rectus, which causes a restrictive strabismus with positive forced ductions. Causes for sixth nerve palsy include microvascular ischemia (due to diabetes mellitus, hypertension atherosclerosis, thus causing damage to the small blood vessels that nourish the nerve), neoplastic lesions inflammatory lesions, trauma and increased intracranial pressure.

As per *Ayurveda*, in this condition *Acharya Vagbhata* has mentioned diplopia in *Dwitiya Patalgata Timira*[3] whereas *Acharya Sushruta* has included diplopia under *Tritiya Patalgata Timira*.[4]

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Materials and Methods

A 32 year old female patient came to the Shalakya Tantra OPD of SJIIM Bangalore with complaints of difficulty in turning right eye away from nose i.e., crossing of eye inward towards nose, headache was constant over right frontal and retroorbital area since 3 days. Which radiates towards nasal side of the eye which is not aggravated with exposure to light and sound, facial weakness, poor alignment of eye, and patient also complains of double vision and to reduce it patient makes a constant turning movement of head. Hence to undergo ayurvedic treatment patient came to our hospital. The patient had no significant family history.

On Examination

Table 1: Visual acuity

	Distant vision	Near vision
Bilateral	6/6 P	N6 P
Right	6/6 P	N6 P
Left	6/6	N6

Table 2: Examination of Eye.

	OD	OS
Eyelashes	Normal.	Normal.
Eyelids	Normal	Normal
Conjunctiva	Normal	Normal
Cornea	Clear	Clear
Pupil	Round regular, reacting to light, no afferent pupillary defect was detected.	Round reactive to light and accommodating.
Lens	Normal	Normal
IOP	18mmHg	18mmHg
EOM Motility (Extraocular Muscles)	Difficulty to abduct the right eye i.e., right eye esotropia.	Normal.
Fundoscopic Examination	Not suggestive of any pathology	Not suggestive of any pathology

Diagnostic Criteria

Ocular Examination

Head Posture:

Face turned to right side.

No facial asymmetry

Ocular Posture

Hirschburg's Corneal Reflex Test: Light reflex appeared outwardly deviated from the centre of the pupil.

45° esotropia in the right eye.

Cover Test

a) With Distant Target

On covering left eye there was outward movement of right eye (RE Esotropia).

b) With Near Target

Right eye esodeviation was more for distant than for near fixation.

Uncover Test:

RE: No movement

LE: Outward movement of right eye

Alternate Cover Test:

RE constant esotropia.

Cranial Nerve Examination

Shows ipsilateral right abducens nerve palsy.

Laboratory tests and neuroimaging studies didn't show any suggestive cause. Hence it was diagnosed as idiopathic abducens nerve palsy. Systemic examination showed no abnormalities.

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Figure 1: Before treatment.

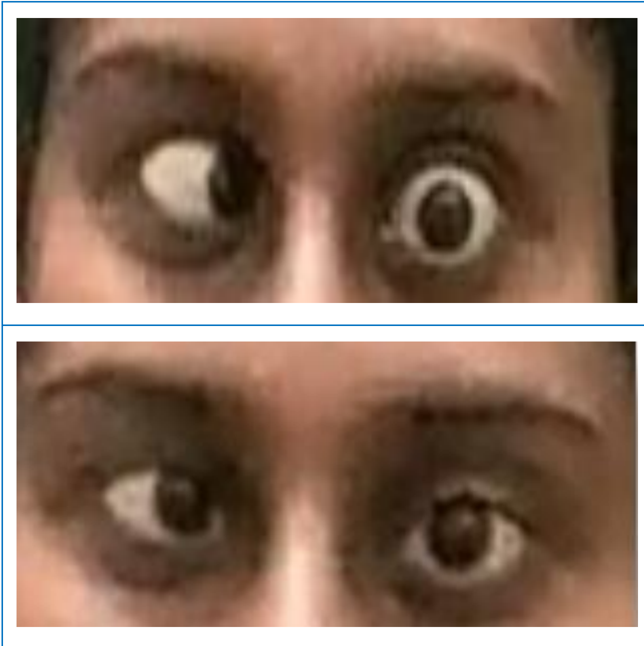
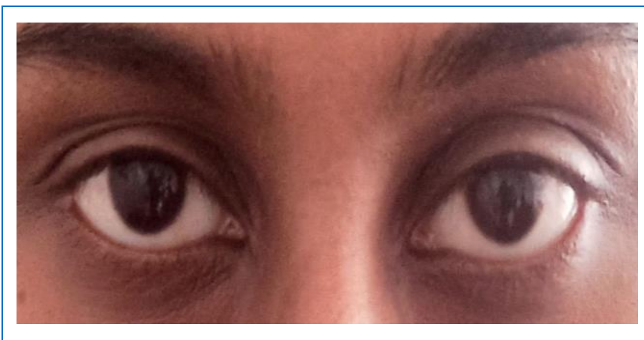


Figure 2: After Treatment.



Ayurvedic Management

Date	Medicine / Treatment	Dose & *Anupana*	Duration
First visit (09/1/23)	1. *Sadhyovirechana with Trivrut Lehya*	40 gm in the morning	1 day
	2. *Marsha Nasya with Panchendriyavardhana Taila.*	12 drops in each nostril	7 days
	Ksheeradhooma with Balamoolakvatha.		
	3. *Tarpana with Shatavaryadi Ghrita*		7 days
	4. *Sapthamrutha loha*	1 BD	15 days
Second visit (24/1/23)	1. *Annalepa* with *Shashtika Shali* processed with *Balamoola Kashaya*		5 days
	2. *Bidalaka* with *Triphala, Yasthimadhu Churna*		5 days.
3rd visit (1/1/23)	1. *Tab.Ekangaveerarasa*	1 BD	15 days
	2. *Ashwagandha Churna*	1 tsp BD with warm milk	15 days
	3. *Dhanadanayanadi Kashayam*	15 ml BD before food	15 days

Result

There was a significant improvement in both the signs and symptoms. Patient could appreciate the reduction in diplopia, headache and facial weakness. Overall satisfactory result was seen. The symptoms like difficulty in abducting in right eye in right lateral gaze, were completely relieved after *Ayurvedic* management.

Discussion

Various pathologies may result in acute palsy of abducens / sixth cranial nerve. Abducens nerve palsy clinically presents with diplopia, inward deviation of the eye and difficulty with lateral ocular movement. The bodily doshas are eliminated by *Sodhana* or *Shamana Chikitsa*. *Virechana Karma* is the process through which vitiated *Pitta Dosha* can be eliminated. The eye is the seat of the *Alochaka Pitta* which is responsible for the vision perception, imbalance in *Alochaka Pitta* may lead to *Netra Vyadhi Lakshanas*. As per *Ayurveda* in this condition there is mainly vitiation of *Vata Dosha* as *Vata* is accountable for all normal activities. Therefore, when there is abnormalcy of *Vata*; sensory and motor activities are often hampered. Considering these facts, *Brimhana* (replenishing / nourishing) line of treatment for correcting the vitiated *Vata Dosha* was adopted. By strengthening and stimulating the abducens nerve motor function were

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improved. *Marsha Nasya* therapy was done through *Panchendriyavardhana Taila* which is administered through nasal root runs up to *Sringataka Marma* (Vital point of junction of blood vessels and nerve endings in the head region) and from *Shringataka Marma* reaches to various *Srotas* (Channels) and reduces the vitiation of doshas. With the help of *Nasya* nourishment to nervous system was provided through diffusion and also by neural and vascular pathway, hence improve the motor functions of nerves.[5]

Nasya strengthens and nourishes the vessels which supply the *Jatru Urdwa Pradesha*. *Nasya* with *Panchendriya Vardhana* oil helps in relieving the obstruction of vitiated *Vata Dosha* in the *Murdha* (head) and it restores the normal functional ability of affected nerves. It also helps to improves blood circulation to related areas of the brain.[6] *Ksheera Dhooma* is a unique traditional practice which is widely used in the treatment of *Jatrurdhwagata Vata Vyadhi*. A combination of *Abhyanga* and *Swedana* together are highly effective in treating neurological disorders muscle weakness, stiffness and spasm, all of which primarily arise due to impaired *Vata Dosha. Balamoola* (*Sida cordifolia*) has *Madhura Rasa, Laghu, Snigdha, Pichhila Guna, Sheeta Virya* and has *Balya, brimhaneeya, Vatashamana* action. In diseases affecting parts above neck region, the drugs selected are *Vatashamaka*, that which promote strength and work towards reducing inflammation of the affected nerves. They act as good nervine tonic, remove neuritic atrophy and synaptic loss. *Swedana Karma* as *a Purvakarma* of *Nasya*, dilate blood vessels and increase local microcirculation by increasing blood flow to the peripheral arterioles which increases the drug absorption and better bioavailability. It also stimulate the local nerves.[7] This was followed by *Tarpana* with *Shatavari Ghrita*. *Ghrita* is effective in subsiding *Pittaja* and *Vataja* disorders and considerably nourishes *Dhatus*. Also, through the *Sheeta Virya* of *Ghrita Alochaka Pitta* can be effectively managed. And due to *Balya, Brimhana,* and *Rasayana* properties of *Ghrita* gives strength to overall tissues of eyeball. Internal medications like Palsinuron acts as nervine and is a remedy for neuromuscular disorders, regulates blood supply and stimulates cerebro-neural activity and promotes curing of damaged of nerves and blood vessels and thererby helps in strengthening of nerves. *Sapthamrutha Loha* is herbomineral formulation commonly used in *Netra Vikaras*. *Dhanadanayanadi Kashayam* is a herbal decoction which relieves the aggravated *Vata Dosha* and also it is used in regaining the lost muscle and nerve function. In resolved cases of abducens nerve palsy, the patient should be monitored annually for any recurrence. Therefore, with proper diagnosis, treatment and following eye exercises abducens nerve palsy could be controlled.

Conclusion

Abducens nerve palsy is the most common ocular motor nerve palsy. The nerve is highly susceptible to injury due to its lengthy intracranial course. Most of the etiology have been recognized but the incidence of cases attributed to idiopathic causes are increasing. This case study focusses on thorough history, physical and neuroimaging examination which is essential to rule out sixth nerve palsy. Hence by adopting the ayurvedic line of treatment for managing complications of abducens nerve palsy satisfactory results could be obtained.

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