Case Series

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MANAGEMENT OF ISOLATED SIXTH CRANIAL NERVE PALSY WITH VIDDHAKARMA AS AN ADJUVANT THERAPY: A CASE SERIES

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ABSTRACT

Background: In Patients with Abducens nerve palsy, diplopia is the most common presenting symptom. Patient will have horizontal uncrossed diplopia which is greater at distance, which worsens in the direction of the palsied muscle and gets better in the contralateral gaze. Vasculopathic risk factors such as diabetes mellitus and hypertension are more common in elderly people due to microvascular ischemia. Treatment options with sixth cranial nerve palsy include alternate patching, prism therapy, strabismus surgery and botulism injections. Here, we present case series of two patients of Isolated Abducens nerve palsy, secondary to Diabetes Mellitus and Hypertension, who underwent Viddhakarma along with other Ayurvedic management. Data were collected prospectively with a follow-up of three months. Case Report: Two cases presented to the Out-patient department with pre-diagnosis of Sixth Cranial Nerve Palsy with signs and symptoms of binocular horizontal diplopia, inability to abduct left eye and mild esotropia secondary to hypertension and diabetes mellitus. In Ayurveda, symptom of Dwitiya Patalgat Doshdushti (Timira) by Acharya Vagbhata and Trutiya Patalgat Doshdushti (Timira) by Acharya Sushruta can be correlated with the diplopia. Snayugata vitiation of Vata Dosha leads to Ekangavata which causes constriction of Sira and Snayu. Thus, sixth cranial nerve palsy can be correlated with Ekangavata and Timira. Viddhakarma as an adjuvant therapy to the Ayurvedic treatment regimen, patients started showing improvement in the symptoms within one to one and a half months and symptoms resolved completely, thereby enhancing the quality of life of the patient. Conclusion: Neuro-ophthalmological cases related to cranial nerve palsies can be treated successfully with Ayurvedic management and Viddhakarma as an adjuvant therapy.

Keywords: Case series, Diplopia, Ekangavata, Isolated sixth nerve palsy, Timira, Viddhakarma.

INTRODUCTION

The abducens nerve which is a sixth cranial nerve supplies the ipsilateral lateral rectus muscle of the eye. Abduction of eye happens when lateral rectus muscle contracts [1].

Sixth cranial nerve (Abducens nerve) palsy leads to complete or incomplete paralysis of the lateral rectus muscle of the eye resulting into paralytic strabismus (ocular deviation).

Cardinal symptom is a horizontal and uncrossed diplopia which aggravates when looking in the direction of the palsied eye, primarily affecting distant vision rather than near vision.

Aetiology

Causes for sixth nerve palsy include: 1) Diabetes mellitus, Hypertension, Atherosclerosis: In which microvascular ischaemic changes causes damage to the small blood vessels that nourish the nerve. 2) Neoplastic lesions such as brain tumours: causes compression of the nerve 3) Inflammatory lesions: due to multiple sclerosis, meningitis, infectious lesions of cavernous sinus and orbit. 4) Trauma: head injury or direct or indirect trauma to the nerve trunk. 5) Increased intracranial pressure.[1, 2]

Differential Diagnoses: Diagnostic work-up for sixth cranial nerve palsy includes dilated fundus examination to rule out optic disc oedema. Laboratory investigations like Complete Blood Count, HbA1C, and blood sugar level test help to assess for microvascular causes. Erythrocyte Sedimentation Rate, C-reactive protein, RA factor help to rule out any inflammatory causes of nerve palsy. Imaging (MRI- brain and orbit) help in assessing the malignancy, aneurysm, stroke. Diabetes mellitus, hypertension, and hypercholesterolemia causes the microvascular mononeuropathy which is the most commonly found cause for isolated sixth nerve palsy.[1, 2]

Treatment modalities for sixth cranial nerve palsy include alternate patching or fogging, prism therapy, strabismus surgery and botulism injections for long standing deviation of six months or more than that.[1, 2]

Dwitiya Patalgat Doshdushti lakshanas of 'Dwidhaikam Drushtimadhyasthe'[3] by Acharya Vagbhata and Trutiya Patalgat Doshdushti Lakshana of 'Drushtimadhyagate Doshe Sa Ekam Manyate Dwidha'[4] by Acharya Sushruta can be correlated with the symptoms of sixth nerve palsy. The concept of double vision is considered as Timira by both the Acharyas.

Also, sixth cranial nerve palsy can be treated on the same line as that of Ekangavata.[5]As mentioned in Charaka Samhita, aggravated Vata fills up the empty Strotas (channels) in the body, resulting into different ailments affecting any one part of the body (Ekanga).[6] Siragata and Snayugata vitiation of Vata Dosha leads

to Ekangavata.[7] It causes constriction of Sira and Snayu,[8] which can be correlated with pathogenesis of isolated sixth nerve palsy. Microvascular ischemia, which is one of the most common causes of isolated sixth nerve palsy, occurs due to nerve injury and loss of blood flow. So, focus was given on Vata, Sira, Snayu in the treatment of the sixth nerve palsy.

Written consent was taken from the patient before enrolling them under the study. The study was carried out as per ICMR National Ethical Guidelines for Biomedical and Health Research involving human participants.

Case Presentation

Case 1: A 61 years old lady with history of Diabetes Mellitus and hypertension since, 16-17 years was admitted in the hospital for DM management. She had undergone Yog-basti (Anuvasan: Til taila, Niruha: Dashamool Kwatha) five days ago. The patient was referred to Shalakya tantra department with complaints of binocular horizontal diplopia and left eye esotropia. She was suffering from these complaints since, one month and was diagnosed elsewhere as a case of left isolated sixth nerve palsy, where she was advised to use an eye patch to relieve the diplopia. She was on the following medications,

Table 1: Medicinal history at the time of first visit

Medicine	Dose
1. tab Metformin	1-0-0
2. tab Istavel (100)	0-1-0
3. tab Telmisartan (40)	1-0-0
4. tab Ecosprin (75)	0-1-0

Table 2: Clinical Findings and Diagnostic Assessment

Ocular Examination	Right eye	Left eye
Visual acuity	6/60(P)	6/60(P)
Near vision	N36	N36
Pin-hole	6/9	6/9
Anterior segment	Unremarkable	Unremarkable
Pupils	Round, regular, reacting to light. Afferent pupillary defect was Not detected	Round, regular, reacting to light. Afferent pupillary defect was Not detected
Fundoscopy	Posterior pole, Optic nerve head, Peripheral retina: within normal limit	Posterior pole, Optic nerve head, Peripheral retina: within normal limit
Diplopia	No diplopia	Diplopia increased in left lateral direction
Extraocular muscles motility	Un-altered	Left eye convergent squint, inability to move left eye in lateral direction (Figure 3 before treatment)

Blood pressure: 130/80 mmHg, Blood sugar level fasting: 155 mg/dl, Post prandial: 260 mg/dl.

Table 3: Treatment given to the patient

Drug	Ingredients	Dose	Anupana	Duration
1.Maha vatvidhwansa, Ekangaveer Ras, Sameerpannag Ras, Sutshekhar Ras	Maha vatvidhwansa, Ekangaveer Ras, Sameerpannag Ras, Sutshekhar Ras	720 mg twice a day (After food)	Warm water	1.5 months
2. Tab. Dhatri-Nisha (250 mg)	Amalaki, Haridra	1-0-1 (After food)	Warm water	1.5 months
3.Dashamoolarishta+ Pathyadi Kadha	Dashamool, Triphala, Kirattikta, Haridra, Nimba, Shunthi	15 ml (3 teaspoon), twice daily (After food)	Mix with 30 ml warm water	1.5 months
4.Nasya: Ksheerbala Avarthi 101 taila	Godugdha, Bala	6 drops in each nostril: for seven days. Later, two drops daily		1.5 months
5. Netra pichu: Jeevantyadi Ghrut	Jivanti, Ghrut, Kakoli, Kshirkakoli, Pippali	Once daily		1.5 months
6. Viddhakarma (as an adjunct)	Vedhan (puncture) with 26 no. half inch needle at Upanasika, Lalaat, Apanga[9] (Figure 1 and 3)	Started from the first visit to the OPD. Twice/week for one month. Later, once/week for one month.		2 months

Lalaat[10]: 1 ½ Angula (thumb)above eyebrow at the junction of lateral 1/3rdand medial 2/3rd
Apanga[10]: Lateral end of eyebrow near the outer canthus
Upnasika[10]: Superior alar crease of the nose.

Management: Along with the ongoing Ayurveda treatment (Nasya, Netra pichu, Abhyantar Chikitsa), Viddhakarma was commenced as an adjunct twice/week for one month, followed by once/week for next one month. Diplopia started reducing after first session of Viddhakarma, decreasing further after every follow-up. The patient got complete resolution of symptoms of diplopia, inability of left eye lateral abduction, left eye esotropia, after a month (Figure 2). The treatment was continued for the next two months as in case 1. No recurrence of symptoms was noted.

Case 2: A 43 years old man, referred to Shalakya Tantra OPD, presented with complaints of binocular horizontal diplopia, left eye mild esotropia, restricted movement of left lateral rectus in left lateral gaze since, one month. Patient was a known case of hypertension since, one year and had a surgical history of thyroidectomy eight years ago. He was on anti-hypertensive medicines but had discontinued those around one and a half months ago, resulting in raised blood pressure.
Blood pressure at the time of first visit: 150/80 mmHg.

Along with antihypertensive medicines (Tab Telmisartan 40 mg 1-0-0), he was being started with the above medicines since, one month with unsatisfactory improvement in diplopia. He was then referred to the Shalakya tantra OPD.

Management: In addition to the ongoing treatment, Viddhakarma was added to the regime with the same procedure and duration as in case 1. Also, Nasya was carried out with Ksheerbala Avarthi 101 taila instead of Panchendriyavardhan taila, he started showing improvement after first session of Viddhakarma itself and got complete relief from diplopia and esotropia within one month (Figure 4). No recurrence of symptoms was noted during the follow-up period.

Table 4: Medicinal history at the time of first visit

Medicine	Dose
1. Tab Telmisartan (40 mg)	1-0-0
2. Nasya with Panchendriyavardhan tail	6 drops in both nostrils once a day since, one month
3. Mahavat Vidhwansan Ras, Ekangaveer Ras, Sameerpannag Ras, Sutshekhar Ras	360 mg three times a day after food since, one month
4. Shirashuladi Vajra Ras (250 mg)	1-1-1 after food since, one month

Table 5: Clinical Findings and Diagnostic Assessment

Ocular Examination	Right eye	Left eye
Visual acuity	6/9P	6/6
Near vision	N8	N8
Pin-hole	6/6	6/6
Anterior segment	Unremarkable	Unremarkable
Pupils	Round and regular in shape, Reacting to light normally. Afferent pupillary defect: Not found	Round and regular in shape, Reacting to light normally. Afferent pupillary defect: Not found
Fundoscopy	Posterior pole, optic nerve head, peripheral retina: within normal limit	Posterior pole, optic nerve head, peripheral retina: within normal limit
Diplopia	No diplopia	Diplopia increased in left lateral direction
Extraocular muscles motility	Un altered	Left eye convergent squint, inability to move left eye in lateral direction (Figure 4 before treatment)

Figure 1: Viddhakarma of Patient 1

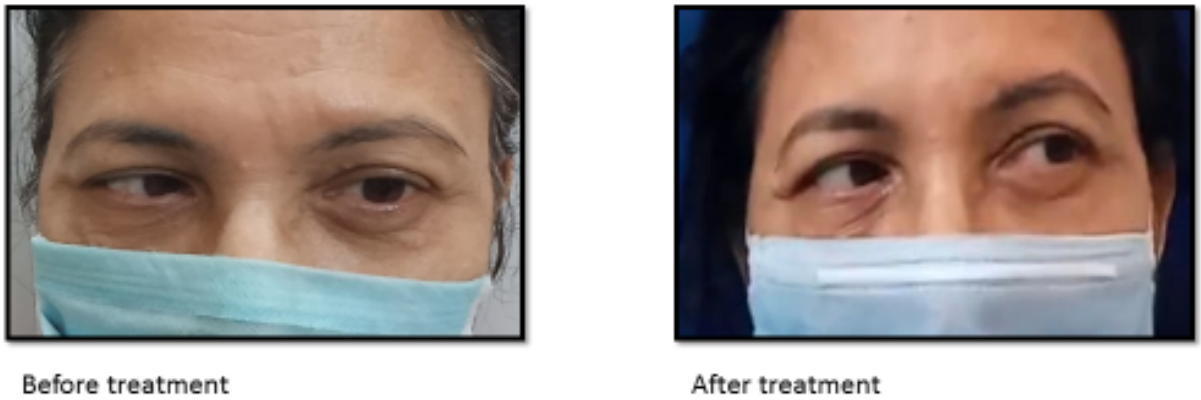

Figure 2: Photographs depicting before and after treatment effect on left eye of patient 1

Figure 3: Viddhakarma of Patient 2

Figure 4: Photographs depicting before and after treatment effects on left eye of patient 2

DISCUSSION

Pathogenesis of sixth cranial nerve palsy: Secondary changes in diabetes and hypertension are microvascular ischaemia which occurs due to nerve injury and loss of blood flow. Osmotic damage caused by sorbitol accumulation and advanced glycation end-products (AGEs) [11] causes the nerve injury. Increased concentration of the tumour necrosis factor- α in adipose tissue results into insulin resistance in obese patients.[12] Increased concentration of plasma TNF-α and macrophages causes significant progression of neuropathy which ultimately continues in contribution of the cytokines to diabetic microvascular complications.[13]

In ayurveda Dwitiya-Tritiya Patalgata Timira, Ekangavata and Snayugata Vata can be correlated with sixth cranial nerve palsy on the basis of symptoms of the disease which explained earlier. 'Akshi-Hundanam' is the symptom explained in Vatavyadhi Adhyaya which can be correlated with diplopia and inability to abduct the left eye which itself represents Vataprakopa[14]. Samanya Samprapti of Netrarogas is based on Siradushti due to Doshadushti.[15] On these considerations, vitiation of Vata, Pitta, Sira and Snayu are considered as the main culprits of pathophysiology of sixth nerve palsy.

In the treatment plan of sixth nerve palsy; Indriya Vikara Chikitsa which is similar to Vatavyadhi should be followed.[16] Abyantar and Bahya Snehana is the main treatment basis of Vatavyadhi[17] Snayugata Vata[18] and Timira.[19] Also, Nasya treatment is indicated to overcome Vata vitiation in head region.[20] Nasya with Ksheerabala Avarti 101 Tailam and Jeevantyadi Ghrita Netrapichoo procedures helped to overcome Vataprakopa, Snayugata and Siragata Vata effectively. Oral Ayurvedic medication such as Mahavat Vidhwansan Ras, Ekangaveer Ras, Sameerpannag Ras, Sutshekhar Ras (all in tablet form), Dashamularishta and Pathyadi Kashayam effectively normalised Vataprakopa and the function of Sira and Snayu. Tablet Dhatri-Nisha and Pathyadi Kashayam were effectively used for Vatashamana, Pittashamana and Raktaprasadana.

Raktamokshana is mentioned in the treatment plan of Ekangavata and Siragata Vata[21]. Snehana and Asraviravana are the integral part of Samanyachikitsa of Timira[17].

Tritiya Patalgata Timira is considered as Yaapya Vyadhi[22] (difficult to treat diseases) and Raktavisravan is a treatment mentioned in all six Yaapya Drushtigat Rogas.[23] Suchi is one of the Shastras that can be used for Viddhakarma and Raktavisravana.[24] So, considering Viddhakarma as a type of Raktamokshana Chikitsa (blood-letting procedure) is used as an adjuvant therapy. The points or Viddhakarma Sthana "Apanga, Lalata and Upanasika" were used as per description given in Sushruta Samhita.[25]

Probable mode of action of Viddhakarma: Vaam Netragaurav (heaviness in the left eye) as mentioned by the patient, was a dull type of pain. Neuropathic pain can be relieved by blocking neuro transmission (Gate Control Theory) In this, fibres which carry fast pain stimulus are stimulated. They activate endogenous analgesic system and close the gate for dull pain carried by the Substance P through Small C fibres, thus resulting in relieving pain in the patients.[26]

Also, Viddhakarma eases hypoxia and acidosis due to ischemia[27] which relieves the pain, heaviness at the sight and increases blood supply to the tissue.

Table 6: Treatment procedure, reference and action

Treatment procedure/ Medicine	Action
Dhatri-Nisha tablet[28]	Rasayan in Diabetes mellitus and diabetes induced complications
Nasya: Ksheerbala 101 Avarthi[29]	Vata Pradhan Tridosh Shamak, Balya, Indriya Prasadak, Psychostimulant and affects central nervous system, Neuro-protective
Nasya with Jivantyadi ghrita[30]	Vata-pitta Shamak, Timira Nashak Yog
Mahavat Vidhwansan Ras, Ekangaveer Ras, Sameerpannag Ras, Sutshekhar Ras (Ayurvedic proprietary medicine by S.G. Phyto pharmaceuticals	Works on neuromuscular disorders associated with Central and Peripheral Nervous System
Dashamoolarishta[31]	Vata Anulomana, Anti-inflammatory, Balya
Pathyadi Kadha[32]	Vata Pradhan Kapha Shamak, Raktaprasadak, Deepan, anti-inflammatory, Nervine tonic
Netra Pichu (cotton swab soaked in medicated ghrita)	Facilitates nourishment of the nerve

CONCLUSION

As the disease can be correlated with Ekangavata, Siragata Vata, Vata-Pitta dosha predominance and Timira, Samanya Chikitsa of Ekangavata, Vataja and Pittaja Timira Chikitsa was planned and got the best results.

Although the palsy may resolve spontaneously over a period of three to six months, complete remission of symptoms in one to one and a half months with Viddhakarma as an adjunct to Ayurvedic treatment, is suggestive of its role in the management of Abducens nerve palsy by improving the quality of life of the patients.

More research work on Viddhakarma as an additional therapy needs to be undertaken to validate its role in the treatment of sixth nerve palsy.

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