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Management of Radial Nerve Palsy w.s.r. to *Ekangavata* and *Marmaghat* - A Case Study

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ABSTRACT

Nervous disorders occurs due to imbalance of *Vata Dosha*. *Acharyas* considered nerve impulses to be kind of air travelling through the body. *Vata Dosha* is responsible for sensory & motor functions of body. In Ayurveda, various nervous disorders and their symptoms are not clumped under heading of single disease, rather they are described as types of *Vata Vyadhi*. Among nervous disorders, peripheral nerve injuries are most commonly encountered in day-to-day practice. One of the commonest peripheral nerves to be injured is Radial nerve. Radial nerve palsy is condition caused due to injury to radial nerve which leads to wrist drop and functional disabilities, In the present case scenario radial nerve is damaged due to compression of radial nerve as a result of prolonged pressure on arm and systemic condition like Diabetes. In the context of Ayurveda, the underlying cause of Radial nerve palsy is often attributed to aggravation of *Vata Dosha*. *Acharya Charaka* and *Madhavkara* mentioned features of *Ekangavata* characterized by localized paralysis or monoplegia. All etiological factors and manifestation of *Ekangavata* are quite resembling with radial nerve palsy. Hence, we can correlate *Ekangavata* with Radial nerve palsy. Another important etiological aspect regarding radial nerve palsy which needs to explore is *Marmaghat*. We have noticed that, in this case *Bahavi Marma* and *Aani Marma* are more prone for the injury, which might have led to the complaints of wrist drop and functional disabilities. we treated this case successfully with *Upanah Swedan*, *Balya*, *Vatashamak* and *Pramehaghna Chikitsa*.

Key words: Radial Nerve Palsy, Diabetes, *Ekangavata*, *Marmaghat*, *Upanah Swedan*, *Balya*, *Vatashamak Chikitsa*, *Splinting*.

INTRODUCTION

Acharyas Charaka stated that diseases are innumerable depending upon their distinctive features like signs & symptoms, etiology and site of origin.^[1] In modern era, we came up with various disease presentations that are not actually described in Ayurvedic Samhita but we have to treat them according to predominance of

Dosha and *Dushya*. *Acharyas* considered nerve impulses to be kind of air travelling through the body. *Vata Dosha* is responsible for sensory & motor functions of body. In Ayurveda, various nervous disorders and their symptoms are not clumped under heading of single disease, rather they are described as types of *Vata Vyadhi*.^[2] *Acharya Charaka* described functions of *Vata Dosha* as '*Vayu Tantra Yantradhara...*' which means *Vata Dosha* governs the nervous system and movement in the body, so that we can say that nerve disorders occur due to imbalance of *Vata Dosha*.^[3]

Among nervous disorders, peripheral nerve injuries are most commonly encountered in day-to-day practice. One of the commonest peripheral nerves to be injured is Radial nerve. Radial nerve is mixed type of nerve, i.e. it has both motor and sensory fibers but predominantly having motor component.^[4] Radial nerve is commonly injured due to its superficial

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location, proximity to humerus shaft and long route. Radial nerve palsy is a condition that occurs due to damage to radial nerve. This condition leads to weakness or paralysis of the muscles controlled by the radial nerve in the arm and hand. Damage to radial nerve can be caused due to trauma, fracture or dislocation of humerus, gunshot wound, compression of radial nerve due to prolonged pressure on arm and systemic conditions like Diabetes.^[5] Radial nerve palsy can be caused due to compression or damage to nerve at three different levels i.e., axilla, arm and elbow. Location of lesion is identified by clinical features and examination of muscle functions.

Clinical features of Radial nerve palsy depend on location of radial nerve injury^[6]

- 1. Low lesions** [damage to radial nerve at elbow]: Finger, wrist and thumb extensions are lost causing wrist drop.
- 2. High lesions** [damage to radial nerve at arm]: Autonomous zone sensation is lost. Brachioradialis and supinator muscle power is lost. Finger, wrist and thumb extensions are lost causing wrist drop.
- 3. Very high lesions** [damage to radial nerve at axilla]: Triceps is paralyzed causing loss of active elbow extension.

In the context of Ayurveda, the underlying cause of Radial nerve palsy is often attributed to aggravation of *Vata Dosha*. *Vata-Dosha* is controller of motor activity and speech. *Vata* in normal state is responsible for movement, activities and life support. Hence, *Vata* derangement always involves some weakness or some sort of neurological deficit. Acharya Charaka mentioned '*Nanatmaj Vatvyadhi*' which are caused due to vitiation of only *Vata Dosha*. *Pakshaghata* is one of the *Nanatmaj Vatvyadhi*. In the context of *Pakshaghata*, Acharya Charaka and Madhavkara mentioned features of *Ekangaroga* characterized by localized paralysis or monoplegia.

Symptoms and etiology of Ekangavata are as follows:

Acharyas Charaka described etiological factors which are responsible for aggravation of *Vata Dosha* such as, sleeping over uneven bed & sitting in odd postures

[*Dukhashayashana*], trauma [*Abhighata*] and injuries to vital body parts [*Marmaghata*].^[7] Aggravated *Vata* seizes power of half of the body i.e., on either right or left, also leads to weakness or loss of strength in affected limb which ultimately is responsible for loss of mobility and function of limb [*Akarmanya*]. Loss of sensation in affected limb [*Vichetan*] and is also characterized by atrophy of muscles [*Sira-Snayu-Vishoshya*] and piercing pain in affected limb.^[8] All the above said etiological factors and manifestation of *Ekangavata* are quite resembling with radial nerve palsy. Hence, we can correlate *Ekangavata* with Radial nerve palsy. Another important etiological aspect regarding radial nerve palsy which needs to explore is *Marmaghata*. *Marma* are vital points on the body where muscles, veins, arteries, tendon, bones and joint meet. *Marma* is a place where *Prana* is said to be situated.^[9] According to Ayurveda, *Kakshadhara*, *Lohitaksha*, *Bahavi*, *Aani* and *Kurpara Marma* are the five *Marma* that are located along the route of radial nerve from its origin. These *Marmas* are *Vaikalyakar Marma*. All these *Marma* when subjected to any form of injury or trauma leads to deformity. In the present case study of Radial nerve palsy, depending upon the clinical presentation it can be infer that, the patient may have compression type of damage to radial nerve at mid forearm. Hence, *Bahavi Marma* and *Aani Marma* are more prone for the injury, which might have led to the complaints of wrist drop and functional disabilities.

CASE PRESENTATION

Patient's Demographic and Chief Complaints

A male patient of 35 yrs old, working as LIC agent with known history of Diabetes and Chronic Alcoholic, presented to *Kaychikitsa* OPD of Dhaneshwari Ayurved Hospital, Georai Tanda, Chhatrapati Sambhajinagar, on 17th January 2024 with complaints of:

1. Inability to extent wrist & fingers of right hand and wrist drop.
2. Numbness & tingling at right forearm and dorsal aspect of index finger and thumb.

3. Inability in picking up objects.
4. Loss of sensation at dorsum of lateral side of hand.
5. Pain at right forearm on and off.

Duration: Since 15 days.

History of present illness

Patient was apparently normal before 15 days. There was sudden onset of symptoms. Patient reported history of heavy alcohol consumption and falling asleep putting his body weight over the right arm for prolonged period in alcohol intoxicated state, on 31st of December 2023. Next morning patient was unable to extend his right hand and fingers against gravity and right wrist drop along with severe tingling and numbness at hand and forearm. Also, there was total loss of gripping power. Patient was not able to lift an object like writing pen. Patient reported to have aggravation of tingling and pain on vigorous movements of hand. On the other hand, there was relief in tingling and numbness on supporting wrist joint. Patient consulted at Neurology department of Government Medical College, Chh. Sambhajinagar, where he got diagnosed as a case of Radial Nerve Palsy. Physician advised him for nerve conduction study, where conduction defect was noted. They advised to keep blood sugar levels in check and physiotherapy, patient did physiotherapy for a week but failed to continue the same. Patient's symptoms got worsened day-by-day causing increased tingling and numbness for which he presented at OPD of Dhaneshwari Ayurved Hospital and Research Institute, Chh. Sambhajinagar.

History of past illness

Patient is recently diagnosed Type 2 Diabetes mellitus [2 months before] for which he is taking Tab.Gemer 1 [Glimepiride 1 mg & metformin 500 mg] 1 B.D. Patient is chronic alcoholic over 10 yrs. He has history of excessive alcohol intake on daily basis, with no periods of absolute abstinence. No known case of Hypertension / Bronchial Asthama / Rhumatoid Arthritis / Major illness. No history of any surgery reported. No history of any trauma reported.

Vitals and Systemic Examinations

Bp - 130/80; Pulse rate - 90/min; Temp - 97.4°F; CNS - conscious & oriented; RS - Clinically NAD; CVS - Sinus rhythm.

Physical Examination

Radial nerve supplies to triceps, extensors of wrist, fingers and thumb, supinator and brachioradialis. Examination of muscle function is also useful in localizing lesions of radial nerve. Following examinations are done for muscle supplied by radial nerve to access its strength and functions.

SN	Examination Rt. Arm	Observations	Gradation of Muscle Power.
1.	Wrist extension	Inability in lifting Rt. wrist joint against gravity causing wrist drop.	0/5
2.	Finger extension	Inability in lifting Rt. hand fingers against gravity.	1/5
3.	Gripping strength	Inability in picking up objects with Rt. thumb & index finger.	0/5
4.	Forearm supination	Present	5/5
5.	Elbow extension	Present	5/5
6.	Brachioradialis reflex	Absent	2/5
7.	Tingling & Pain	At right forearm and dorsal aspect of index finger and thumb.	8/10 (Visual Analog Scale with 0 as minimum and 10 as maximum)
8.	Sensation	Loss of sensation over dorsum of lateral side of hand.	Absent

Diagnosis: Above said physical examination and clinical features of patient confirmed the diagnosis of High radial nerve palsy [Saturday nerve palsy]. It occurs due to compression of radial nerve against humerus around radial groove till it pierces septum.

Investigations and lab work

18th January 2024 [Pre-treatment]

Complete blood count:- HB- 15.9,RBC- 5.10/Mill/cu/mm, WBC- 6220/cu/mm, Platelet- 195/cu/mm, Blood sugar fasting - 234 mg/dl, Blood sugar postprandial - 298 mg/dl, Urine analysis - sugar +++++, Liver function test - WNL

29th January 2024 [Second visit]:

Blood sugar fasting - 140 mg/dl, Blood sugar postprandial - 162 mg/dl, Urine analysis - WNL

Treatment Approach:

Integrated treatment approach was used in this case of Radial nerve palsy. Considering the patient's Bala and the *Vata Pradhanya*, it was decided to avoid *Shodhan* and implement *Shaman* regime, as *Shodhan* may further lead to vitiation of *Vata Dosha*. The *Shaman* treatment incorporated following external procedures and medicines.

- 1. Upanah Swedan:** *Upanah* is application of warm paste of *Vataghna Dyavya* with *Lavana*, *Sneha*, *Takra* or *Ksheer* over affected body part and bandaging it with cloth.^[10] In this patient, *Godhumadi Upanah* was used.^[11]
- 2. Balya:** *Ashwagandha* and *Bramhi* were the drug of choice considering their *Vatshamak* and proven action on CNS.
- 3. Pramehaghna Drugs:** *Chandraprabhavati* and *Nisha Amalaki Churna*, these two drugs were used to have a control on the blood sugar levels and also to combat the complications, of Diabetes Mellitus Type 2.
- 4. Anupan:** Lukewarm water was commonly used as *Anupana* throughout the course of treatment.
- 5. Rasayan Chikitsa:** *Rasayan Chikitsa* was added at a stage when most of the symptoms were relived

in order to facilitate the faster recovery. For this purpose, *Amruta Ghanavati* was used.

- 6. Splinting:** Adequate support in the form of splint was advised in order to prevent further consequences like muscular atrophy, contracture and to protect the affected muscles and joint.

Treatment Details

Date	Treatment	Dose	Duration
17/01/2024 [First visit]	1. <i>Godhumadi Upanah Swedan</i>	6 hours a day	15 days
	2. <i>Ashwagandha-Vati</i>	750 mg BD	15 days
	3. <i>Bramhi Vati</i>	500 mg BD	15 days
	4. <i>Chandraprabhavati</i>	500 mg BD	15 days
	5. <i>Nisha-Aamalki Churna</i>	5gm BD	15 days
29/01/2024 [Second visit]	1. <i>Godhumadi Upanah Swedan</i>	6 hours a day	8 days
	2. <i>Ashwagandha-Vati</i>	750 mg BD	15 days
	3. <i>Chandraprabha-Vati</i>	500 mg BD	15 days
	4. <i>Nisha-Aamalki Choorna</i>	5 gm BD	15 days
	5. <i>Amruta Ghan-Vati</i>	500 mg	15 days

Procedure of *Godhumadi Upanah Swedan*:

Ingredients:

1. *Godhum Churna* - 50 gms
2. *Teela Kalka* - 50 gms
3. *Rasna Choorna* - 20 gms
4. *Ashwagandha Churna* - 20 gms
5. *Godugdha* - 150 ml
6. *Teela Taila* - 20 ml

7. Saindhav Lavana - 10 gms
8. Eranda Patra
9. Bandage
10. Cardboard

Poorvakarma: Upanah Nirman

Godhum Churna, Teela Kalka, Rasna and Ashwagandha Churna are mixed with Godugdha. This mixture is heated on low flame till you get soft textured paste. Saindhava Lavana and Tila Taila are added to mixture at end.

Temperature of Upanah Dravya: 38-40°C.

Pradhankarma: Snehana is done with warm Bala Taila over affected Rt. forearm in gentle way, as too much pressure can irritate radial nerve. Warm paste of Upanah Dravya was applied over Rt. forearm, wrist and hand in opposite direction of hair-follicles. Uniform thick layer of 2cm is formed, it is then covered with Erandapatra. After that for splinting purpose we have used cardboard of forearm length to keep hand in supine position with wrist in slightly extended position to prevent wrist drop. Bandage was tied along the length of forearm, wrist and hand.

Pashchyat Karma: Patient was asked to keep Uapanah in position for 6 hours. After six hours, paste was removed with lukewarm water and finally Abhyanga was done with lukewarm Bala Taila.

RESULTS AND OBSERVATIONS

Examination	Observations		Grade	
	Before	After	Before	After
Wrist extension	Inability in lifting Rt. wrist joint against gravity causing wrist drop.	Wrist extension present	0/5	5/5
Finger extension	Inability in lifting Rt. hand fingers joint	Finger extension present	1/5	5/5

	against gravity			
Gripping strength	Inability in picking up writing pen with Rt. Thumb & index finger	Able to pick up pen with Rt. thumb & index finger	0/5	5/5
Tingling & Pain	At right forearm and dorsal aspect of index finger and thumb	--	Present [8/10]	Absent
Sensation	Loss of sensation over dorsum of lateral side of hand	Patient can feel pain on pricking with pen	Absent	Present



First visit 17 Jan 2024



Godhumadi Upanah Bandahan

Post treatment 15th feb 2024

DISCUSSION

Mode of action of Upanah Swedan

Upanah Swedan is type of *Ekang Swedan* where only a part of body is subjected to *Swedan Karma*. In this case of radial nerve palsy only Rt. Hand is affected so *Upanah Swedan* is ideal for *Swedan* purpose. During the process of *Upanah Swedan*, we have applied warm paste of various *Vataghna* and *Balya Dravya* along with *Saindhava* over affected part and covered it with *Eranda Patra*, to ensure continuous fomentation for at least 6-7 hours. *Upanah Swedan* causes dilatation of capillaries thus increases circulation at affected area which in turn enhances absorption of *Upanaha Dravya* and *Sneha*.^[12] *Ushna Guna* of *Swedan Karma* also stimulate muscle and nerves, which promotes its renovation. *Swedan Karma* helps to relax muscle, reduces pain and stiffness at affected site. This is particularly helpful in radial nerve palsy condition caused due to compression of nerve. In short, *Upanah Swedan* promotes blood circulation, reduces inflammation of nerve and muscles and also facilitates the expected effect of the medicines. **Splinting:** In modern medicine splinting is a common treatment approach for radial nerve palsy. In present case scenario, while applying *Upanah*, we have used cardboard for splinting purpose. Splinting can help to maintain proper positioning of wrist, hand and fingers as well as provide support and protection to the affected muscles and joint. Splinting is done in such a way that, wrist is kept in slightly extended position and fingers in functional position; this can help to prevent

the development of contractures and promote functional use of hand.^[13]

Mode of action of Ashwagandha Vati

Ashwagandha is having *Balya*, *Rasayan*, *Vataghna* properties.^[14] *Ashwagandha* provides strength to nerves and muscles by pacifying *Vata Dosh* and reducing inflammatory conditions of nerves. It is beneficial in restoring functions of nerves.

Mode of action of Bramhi Vati

Bramhi Vati was used in present scenario for its *Balya*, *Tridoshshamak* and *Pramehahara* properties.^[15] *Acharya Charaka* included *Bramhi* in *Balya Varga*. It is primarily known for its cognitive, neuroprotective and anti-inflammatory effect. In radial nerve palsy we have noted that patient is having compression of radial nerve leading to impaired nerve conduction resulting in paralysis, numbness in affected area. One of the pathophysiological findings noted in radial nerve palsy is disruption of myelin sheath which is responsible for insulating nerve conduction, Re-myelination of affected nerve fiber is crucial for recovery process. *Bramhi*, because of its anti-diabetic properties along with marked neuroprotective action & significant anti-inflammatory effect, have given a very prompt relief from the signs and symptoms.

Mode of action of Chandraprabha Vati

Diabetes can significantly increase the risk of radial nerve palsy. As Chronic high blood sugar level can lead to nerve damage, causing numbness tingling and weakness. In present case scenario we have used *Chandraprabha Vati* and *Nisha-Amalaki Churna* as *Pramehaghna Chikitsa*

CONCLUSION

Prognosis of radial nerve palsy is governed by the underlying cause and the extent of nerve damage. In this case, patient was diagnosed with Radial night palsy. In Radial night palsy there is compression of nerve due to prolonged pressure causing loss of function. If timely and adequately treated, Radial night palsy patient usually recovers within few weeks to few months. Delayed recovery causes lot of consequences

such as muscular atrophy, joint stiffness, contractures and functional disability. It is important for individuals with radial nerve palsy to receive appropriate, adequate and timely medical treatment for speedy recovery and to minimize potential consequences. With integrated treatment approach which includes *Upanah Swedan* with splinting and *Shaman Chikitsa*, patient recovered within 15 days of treatment. Patient is able to use his hand and wrist effectively; he can now perform fine activities like writing & grasping objects. Radial nerve palsy can be debilitating and impact the individual's quality of life, if delayed recovery happens. Ayurvedic treatment approach plays major role by regaining patient's functional abilities, avoids consequences and also ensures speedy recovery.

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