



A CASE REPORT ON AYURVEDIC MANAGEMENT OF AMYOTROPHIC LATERAL SCLEROSIS

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ABSTRACT:

Amyotrophic lateral sclerosis (ALS) is a type of Motor neuron disease, which affects human life in various ways. MND is a progressive disorder of unknown cause, in which there is degeneration of motor neurons in the spinal cord and cranial nerves nuclei and pyramidal neurons in the motor cortex. MND can significantly shorten life expectancy and unfortunately eventually leads to death. Multifocal ALS can present with upper and lower limb muscle stiffness and weakness, muscle twitching, atrophy, falling/stumbling, slurred speech, difficulty swallowing and loss of dexterity. In Ayurvedic contexts *majjaksaya* are found to have close resembles to MND. **Main clinical findings:** A 45 yr old male patient having complaints of difficulty in speaking, walking, clenching fist and holding objects from last 9 months. **Diagnosis:** He was diagnosed with MND in March 2024. **Intervention:** Ayurvedic treatment commenced with *abhyanga*, *bashpa-swedana*, *virecana*, *sarvanga mashpinda swedana*, *niruha basti*, *matra basti*, *shirobasti*, *nasya karma*, *kavala* and oral medication like *balamoola kwatha*, *ashwagandha churna*, *balabeeja churna* and among others. **Outcome:** The functional rating scale for ALS (ALSFRS-R) was used for assessment. The ALSFRS-R score before treatment was 26 which were increased to 39, with marked improvement in speaking, walking, clenching fist and holding objects.

KEYWORDS: Amyotrophic lateral sclerosis, Motor neuron disease, Ayurveda Management

INTRODUCTION:

Amyotrophic lateral sclerosis is the most common form of progressive motor neuron disease. Motor neuron disease (MND) is a condition where in motor neurons in the brain and spinal cord gradually stop working due to degeneration. This may lead to dysfunction of the somatic muscles and in its final stages respiratory system gets affected which might even lead to death.⁽¹⁾ The prevalence of the disease is said to be 4.5 per 100,000 populations and in the year 2016 alone it is estimated that 34,325 deaths occurred due to MND globally.⁽²⁾ The proper understanding regarding the disease still needs to be done but it is believed that genetic mutations within superoxide dismutase 1 (SOD1)⁽³⁾ and C9orf72⁽⁴⁾ is linked with its occurrence. MND mostly manifest in the form of Amyotrophic Lateral sclerosis (ALS) which accounts for 85% of the total cases⁽⁵⁾ while remaining types like Progressive bulbar palsy, Progressive muscular atrophy and Primary lateral sclerosis are having comparatively lesser incidence rates. ALS is considered to be a neurodegenerative disorder usually affecting the motor functions of either limbs (limb onset) or head and neck (bulbar onset) or both (multifocal) exhibiting symptoms related to either Upper motor neuron disease (UMN) or Lower motor neuron disease (LMN) or both.⁽⁶⁾ There is no accurate treatment for the disease albeit the class of drugs like anti-glutamnergic drugs (benzothiazoles), edaravone, mastinib and benzodiazepines are used to prevent complications associated with prognosis of the disease.⁽⁷⁾

This disease can be correlated to *Majjakshaya*. As the disease is chronic and progressively debilitating we can infer the *Dhatukshaya*. The symptoms of *majjaksaya* are as follows: *asthi sheeryata* (emptiness of bones), *durbala - laghu asthi* (thinness, weakness and lightness of bones), *vata roga* (frequent affliction with *vata* imbalance disorder). The *Vata dosa*

likely to be vitiated throughout the course of disease. Therefore *shodhana*, *brimhana*, *rasayan chikitsa*, *vatahara chikitsa* was done.

PATIENT INFORMATION:

A 45 year old, male patient came to our hospital on 28/3/2024 with complain of difficulty in speaking, walking, clenching fist and holding objects. According to patient, he was relatively healthy before 2 yrs. Then suddenly he has complained about chest pain and undergone angiography and angioplasty was done in 2022. Then after 1yr he was diagnosed with DM type 2 while going for routine check up and took medicine (tab glycomet-0-0-1) for that. Then he started complained of difficulty in speaking, walking, clenching fist and holding objects since 9 months and other associated complains of wasting and spasticity of both upper and lower limbs, generalized weakness, heaviness in both lower limbs, difficulty in writing or buttoning the shirts or dress hygiene from past 9 months. No any history of smoking or alcohol consumption. Bowel habits are normal and family history not significant. He consulted to neurophysician for above mentioned complained, who suggested him to undergo nerve conduction test which suggest, there is electrophysiological evidence of active and chronic motor neuropathy affecting bilateral cervical, left bulbar, thoracic region with early changes of denervation and reinnervation in left lumbosacral region as can be seen with clinical diagnosis of generalised motor neuron disease and also suggested EMG report which suggest abnormal EMG from both upper and lower limbs, extensive active denervation and regeneration changes in all muscles and in MRI of brain with whole spine screening suggest global cortical scale -1, mild diffuse cerebral atrophy, spondylitic changes in lumbar spine, mild – moderate neural compression. so he was admitted and took treatment (inj edaravone, tab riluzole, tab rozucar, tab liofen xl, tab tolperitas-sr 450, tab mecobol-OD, tab glycomet -500, tab bisobis T 2.5 mg) but patient did not get relief. So, he came here for further Ayurvedic treatment. He had been admitted and first treated with *sarvanga abhyanga*, *sarvanga baspa swedana*, *virecana karma* and followed by *mashpinda swedana*, *basti niruha (dasmula kwatha)* and *matra basti (bala taila)*, *shirobasti (bala taila)*, *nasya karma (bala taila)*, *kavala* and oral Ayurvedic medicaments viz., *balamoola kwatha*, *ashwagandha curna*, *balabeeja curna*, *brihatvatachintamani rasa* and *shamanartha snehpana* with *bala taila*.

CLINICAL FINDINGS:

After admitting the patient in our hospital on 28/03/2024 thorough examination was done. Patient is conscious, follow verbal commands, EOM: full, Scanning speech, spasticity UL>LL (Grade 2 in both upper limbs, Grade 1 in both lower limbs), grip - weak, muscle power bilateral 4+, tongue fasciculation +, Atrophy :1st dorsal interossei, spastic gait, DTR-3+ bilateral, babinski sign - + bilateral.

INVESTIGATIONS DONE: EMG (Figure 1), Nerve conduction test (Figure 2).

ANA PROFILE: Negative

The sign and symptoms of the patient, the investigations report and examination findings together confirmed diagnosis of ALS (MND). The ALSFRS-R scoring was considered for the assessment of the disease which comprised 12 variables.

On Examination

1. *Nadi* /Pulse - 68/min, *vatakapha*
2. *Mala* (stool)- once in a day with foul smell
3. *Mutra* (urine)- normal output, no burning in urine, no foul smell
4. *Jihva* (tongue) – *Sama*, normal in size, shape with white coating on the surface
5. *Shabda* (speech) - *Prakrut* (normal)
6. *Sparsha* (skin) - *Prakrut* (normal)
7. *Druk* (eyes) - *Pita Varniya*
8. *Akruti* – *Madhyam*

TIMELINE:

Table NO: 1 represent the timeline of the occurrence of events in the present case study, it represents all the symptoms along with the previous treatment by the patient and the results obtained.

THERAPEUTIC INTERVENTION:

The patient was treated through *shodhana* and *saman* treatment as follows: the study was planned to generate the first exploratory data on the potential of Ayurvedic medicine for MND.

Patient is admitted on 28/03/2024 in the P.D.Patel Ayurveda hospital and treated in the I.P.D. with the following treatment

• *Sarvanga abhyanga* (whole body massage) with *bala taila* and *Sarvanga Svedana* (whole body steam) with *Nirgunḍī patra* for 2 days just after admission.

• On 3rd day of admission, after *sarvanga abhyanga* and *swedana*, *mrudu virechana* (mild laxative) with *eranda sneha* - 40 ml + *dindayala churna* -5 gm with *draksa kwatha* was given. With that he had 13 vega in *virecana*.

- On 4th day, *Samsarjana karma* was followed after *virecana karma*
- On 5th day, after *samsarjana karma*, oral medication should be started :
 - 1) *Balamoola kwatha* -40 ml – twice a day on empty stomach
 - 2) *Ashwagandha churna* -3gm –twice a day with milk
 - 3) *Balabeeja choorna* -3 gm – twice a day with milk
 - 4) *Brihatvatachintamani rasa*-1 tab –twice a day for chewing
 - 5) *Shamanartha bala taila* -20 ml/25 ml- twice a day with decoction on empty stomach.
- On 6th day, *sarvanga abhyanga* with *bala taila* followed by *sarvanga swedana* with *nirgundi patra* was continue and gave *niruha basti* with *dasmoola kwatha* (320 ml) on empty stomach. Oral medication should be continued.
- On 7th day to till discharge, *sarvanga abhyanga* with *bala taila* followed by *sarvanga mashpinda swedana*. *shirobasti* with *bala taila* ,*nasya karma* with *bala taila* (8 drops to 16 drops each nostrils), *kavala* with *ashwagandha churna* -1 gm + *vacha churna*-300 mg+ *bala taila* – q.s.daily one time ,daily *matra basti* with *bala taila* -40 to 60 ml after dinner and oral medication should be continued.

DIETARY INTAKE:

- Patient is advised to take mung, mung bean soup, boiled vegetables like ridge gourd, sponge gourd, bottle gourd, pointed gourd, ash gourd, drumstick, fenugreek seed leaves and bitter gourd. To take cow ghee and milk. To drink Luke warm water.
- To avoid rice, potatoes, oily, spices, fermented food, dairy products, bakery items like biscuit, salty items, sour foods like lemon, tomato, frozen items, chill water.

OUTCOME:

The results were assessed by using ALSFRS-R scoring parameters which includes 12 subjects each varying from 0 to 4 (5 grades) where 0 implies complete loss of function and 4 to be normal and the total score is calculated to assess the prognosis. Higher score indicates better chances of survival and lower score indicate bad prognosis. The assessment was made in before and after treatment. The scoring before the treatment was 26 while after the treatment and follow-up it was found to be 39. There was good improvement in speech, swallowing, walking, climbing stairs and salivation was almost normal. Also there was improvement in fine movement activities like handwriting or buttoning the shirts or dress hygiene. The changes in scores noted at before and after treatment in Table no 2.

- The laboratory investigation mentioned in Table no: 3.
- The changes in signs are as follows :difficulty in walking (Figure 3), muscle spasticity in both hands (Figure 4) , range of motion (Figure 5)
- The response to the treatment was done by the symptomatic assessment of patient :
 - **After completion of 7 days-** Improvement in finger movements like
 - Opposing other fingers with thumb
 - Typing on keyboard
 - Switch on and off the lights and fan
 - When supine position change his position without support
 - Raising hand up to switch board (90 degree)
 - Holding tumbler ,mug, pen
 - **After completion of 14 days**
 - It was noted that quality of letters written by patient were getting better
 - He will try to stand up without support
 - He will try to walk without support
 - He will try to do his normal activity like brushing, bathing
 - It was noted that the quality of letters written by patient were getting better some days and, on some days, it was not up to mark.
 - Typing on key board was successful.
 - **After completion of 21 days**
 - Patient was able to lift and rotate (Circumduction)
 - Patient was able to rotate his both arms
 - He was able to hold and eat 8-9 spoons with right hand
 - He was able to do his normal activity like brushing ,bathing, buttoning the shirts and dress hygiene
 - Improvement in handwriting
 - **After completion of 28 days**
 - He was able to walk without support
 - He was able to stand up without support

DISCUSSION:

ALS is difficult to cure and there is no precise equivalent correlate for MND in Ayurveda. MND can be considered as *vata* predominant disease. The *kaphavata vardhaka nidana* (causative factor) would aggravate *kapha* and *vata* respectively and in extreme condition the aggravated *kapha* would lead to *avarana* (occlusion) of *udanavaha srotasa* (channels of *udana vata*). Due to obstruction to its own *gati* (~movement) *vata* gets vitiated and depending on the *srotas* it is being occluded respective symptoms occur. ⁽⁸⁾ Hence the malfunctioning of *udana*, *vyana* and *prana vata* can be noted in elements like *rasa* (~nutritional essence), *rakta* (~vascular tissue), *mamsa* (~muscular tissue), *meda* (~fat tissue), *majja* (~marrow), *snayu* and *kandara* (~Tendons and Ligaments). So, it can be correlated with *majjaksaya*. In Ayurveda, *asthi dhatu* provides nourishment for the marrow. The symptoms of *majjaksaya* are as follows: *asthi sheeryata* (emptiness of bones), *durbala - laghu asthi* (thinness, weakness and lightness of bones), *vata roga* (frequent affliction with *vata* imbalance disorder). *majja ksaya* causes *vata vridhhi* which causes *asthi ksaya* which causes loss of bone mass. Therefore *shodhana*, *brimhana*, *rasayan chikitsa*, *vatahara chikitsa* was done after the admission of patient in I.P.D., *sarvanga abhyanga* (whole body massage) with *bala taila* and *sarvanga baspaswedana* (whole body steam) with *nirgundi patra* for 3 days and *mridu virecana* (mild purgation) was given to the patient. Its *snehana guna* is *snigdha* and *guru* which subsides *vata ruksa* and *laghu guna*. *swedana guna* is *usna* which subsides *vata sita guna*. *Mridu virecana* with *snehadravya* is indicated in *vatavyadhi* treatment in Ayurveda classics. ⁽⁹⁾ *Abhyanga* in neurological condition for achieving muscle relaxation and activation. *Abhyanga* and *swedana* both together relieve spasticity or rigidity.

Bala taila has been administered in the patient as *abhyanga* (massage), *nasya* (medicated oil administered by nostrils), *matra basti* (medicated oil administered by anal route), *shirobasti* (medicated oil put on scalp-head region) and *abhyantara snehpana* (medicated oil administered orally). *Bala taila guna* is *snigdha*, *balya*, *usna virya*, *vataharanam*⁽¹⁰⁾ which subsides *vata ruksa*, *sita guna*. *Basti* and *Nasya* plays a key role in maintaining the normal course of *Vata*. In *Basti*, rectal route administration of medicated oil is executed. The patient is allowed to retain the same for a considerable period of time or according to the retaining capacity. Such an administration can bypass the hepatic metabolism of drug.⁽¹¹⁾ Rectal drug administration can ensure a comparatively faster absorption of drug. An expected liposomal activity of the medicated oil can thus help in the easy distribution of drug to the target cells. *Nasya*, the intranasal medicine administration, owns the potential to cross the blood brain barrier.

Mashpinda swedana is more preferable to *baspaswedana* due to tactile stimulation. It is considered beneficial for improving muscle strength and treating conditions related to muscle wasting. *Masha* means black gram. *Pinda* means a bolus. *Sweda* means Fomentation or sudation. This procedure is unique, which comprises both *snehana* (oileation) and *swedana* (sudation) (*snehayukta swedana*).⁽¹²⁾

Ashwagandha churna having *laghu*, *snigdha guna*, *usna virya*, *balya* so it pacifies *vata* and *kapha*. *Ashwagandha* is known to provide aid in managing problems associated with stress and anxiety due to its *Rasayana* (Rejuvenating) and *Vata* balancing properties. These properties may also help in diabetes management. *Ashwagandha* prevents damage of nerve cells due to its antioxidant property.

Balamoola kwatha and *Balabeeja chuna* having *balya* and *vatahara* properties.⁽¹³⁾ It is used as a tonic and to activate the function of the nervous system by increasing blood circulation. It gives strength to nerves, which will ultimately help in disease.

Brihatvatachintamani rasa is the best *Vatahara* drug especially in neurological debilities. All functions related with sensory and motor activities are chiefly controlled by *Vata*. Whenever sensory activity of the body is affected there will be an outbreak of many *vatavyadhi*, chiefly when the brain and brain cells are involved it causes different types of neurological troubles. *Swarna* and *Roupya Bhasma* are *dhatu pushtikara*, *vata shamaka*, cell rejuvenator, especially cells of brain and nervous system, neurons and nerve ganglions. *Abhraka bhasma* is *rasayana*. *Loha bhasma* is *rakta dhatu vardhaka*, increases the quality of blood circulatory system, improves the quality of blood vessels, *Pravala* and *Mukta* are *asthi dhatu vardhaka*, *pitta shamaka*, *mastishka shamaka* and *hridaya pushtikara*. *Rasa sindhura* is best *rasayana*, *vata shamaka*.⁽¹⁴⁾

CONCLUSION:

MND is a serious condition which affects the motor functions of the body. Multifocal onset of ALS can be challenging to treat especially when the duration of the disease is longer. Early diagnosis of the disease may help in preventing the complications. Ayurveda offers a comprehensive approach to managing ALS by addressing the underlying imbalances in the body's bioenergetic framework. While more research is needed to establish its efficacy definitively, many individuals find relief from symptoms and improved quality of life through Ayurvedic interventions. Ayurvedic protocol- *shodhana* (purifying) along with *samana chikitsa* (pacifying) can create miracles in patient's life because of ability of evacuation, excellences in efficacy and enormity of the procedures to target *dosa's* eradication and pacification. The present study

reveals that this treatment protocol effectively manages the patient with ALS (MND). Extended follow up and more patients are required to reach any conclusion. Still, in this case, it can be stated that this treatment is a hope for the patient of ALS (MND).

CONFLICT OF INTEREST:

No any conflict of interest.

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Table No 1:

TIME	DISEASE CONDITION	TREATMENT
1/3/2024	Difficulty in speaking, walking, clenching fist and holding objects, generalized weakness	Hospitalized and inj edaravone (60mg+250 ml NS) IV over 2 hour Tab riluzole 50 mg (1-0-1), Tab liofen XL 40 mg (0-0-1), Tab tolperitas SR 450 mg(1-0-0) Tab ecosprin(0-1-0) Tab brlinta 90 mg (1-0-1) Tab rozogold 20 mg(0-0-1) Tab tazloc 40 mg (0-0-1) Tab concor 2.5 mg(1-0-0) Tab glycomet SR 500 mg(0-0-1)
15/3/2024	Difficulty in speaking, walking, clenching fist and holding objects, generalized weakness	Tab riluzole 50 mg (1-0-1), Tab liofen XL 40 mg (0-0-1), Tab tolperitas SR 450 mg(1-0-0) Tab rozogold 20 mg(0-0-1) Tab bisobis T 2.5 mg(1-0-0) Tab glycomet SR 500 mg(0-0-1) INJ edarevone 10 days (from 1 to 10 date) of every moth for 6 months.
28/3/2024	Patient came to P. D. Patel Ayurvedic Hospital	
28/03/2024	Difficulty in speaking, walking,	In Ayurvedic treatment , <i>sarvanga abhyanga</i>

To 29/03/2024	clenching fist and holding objects, generalized weakness	with <i>bala taila</i> followed by <i>sarvanga baspa swedana</i> with <i>nirgundi patra</i> for 2 days. All conventional medicine was continued.
30/03/2024	Same as above complain	<i>Virecana karma</i> with <i>eranda sneha</i> -40 ml + <i>dindayala churna</i> -5 gm with <i>draksa kwatha</i> (<i>sarvanga abhyanga</i> and <i>swedana</i> was done).Decrease the dose of Tab riluzole (1/2-0-0) and Tab glycomet SR 500 mg (0-0-1/2), Tab rozugold 20 (0-0-1/2)
31/03/2024	Pt feels better and improvement in walking	<i>Samsarjana karma</i> starts daily ayurvedic medication 1) <i>Balamoola kwatha</i> -40 ml- twice a day on empty stomach 2) <i>Ashwagandha churna</i> -3 gm – twice a day with milk Continue above conventional medicine.
1/04/2024	Same as above complaints	<i>Niruha basti</i> (<i>dasmoola kwatha</i> -320 ml) given after <i>sarvang abhyanga</i> with <i>bala taila</i> followed by <i>sarvanga baspa swedana</i>) continue oral medication Continue above conventional medicine.
2/04/2024	Same as above complaints	<i>Sarvanga abhyanga</i> with <i>bala taila</i> followed by <i>sarvanga mashpinda swedana</i> <i>matra basti</i> with <i>bala taila</i> -40 ml given after dinner.daily <i>shamanartha bala taila</i> -20 ml –twice a day with decoction on empty stomach .continue oral medication Continue above conventional medicine
3/04/2024	Same as above complain complain backpain	Daily <i>Sarvanga abhyanga</i> , <i>sarvanga mashpinda swedana</i> , <i>matra basti</i> with <i>bala taila</i> , oral medicaments was continued. add <i>brihatvatachintamani rasa</i> 1 tab twice a day for chewing Continue above conventional medicine
4/04/2024 To 14/04/2024	Improvement in speaking Improvement in walking Improvement in holding objects No backpain	Continue above treatment daily Since 10/04/2024, tab glycomet SR stopped.
15/04/2024 To 18/04/2024	Same as above complain	Continue above treatment but increase the dose of <i>matra basti</i> with <i>bala taila</i> 60 ml and <i>shamanartha snehpana</i> with <i>bala taila</i> 25 ml -2 times with decoction on empty stomach Continue above conventional medicine
19/04/2024	Same as above complain	Continue above treatment daily Continue above conventional medicine
20/04/2024	Improvement in speaking Improvement in walking-walk without support Pt holds objects and clench the fist	Continue above treatment daily and increase dose of <i>nasya karma</i> (<i>bala taila</i> -16 drops each nostril) Continue above conventional medicine
21/04/2024 To 2/05/2024	Improvement in all complaints	Continue above mentioned treatment On 21/04/2024, Tab riluzole stopped ,Tab Rozugold should be continued.
03/05/2024	Significant improvement noted. improvement in speaking, walking clenching fist and holding objects	Patient is discharged and advised to take oral medication at home and come for regular follow up.

Table No: 2

PARAMETERS	BEFORE TREATMENT	AFTER TREATMENT
Speech	2	3
Salivation	2	3
Swallowing	3	4
Handwriting	0	3
Cutting food	1	4
Dress and hygiene	2	3
Turning in bed	3	3
Walking	2	3
Climbing stairs	0	1
Dyspnea	4	4
Orthopnea	3	4
Respiratory insufficiency	4	4

Table No: 3

DATE	URINE SUGAR	PP ₂ BS
1/4/2024	Nil	160
10/4/2024	Nil	125
24/04/2024	Nil	120
1/5/2024	Nil	122

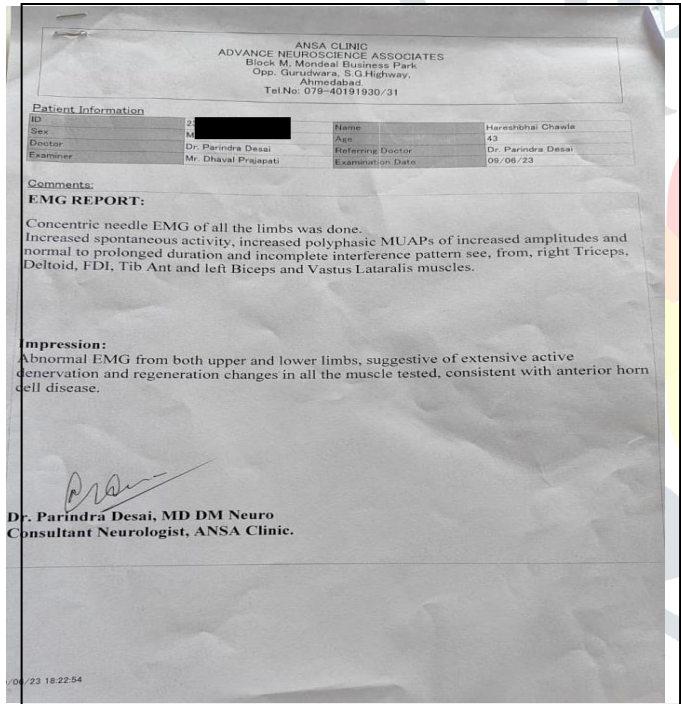


Figure 1

EMG

Abnormal EMG from both upper and lower limbs suggestive of extensive active denervation and regeneration changes in all the muscle tested. Consistent with anterior horn cell disease.

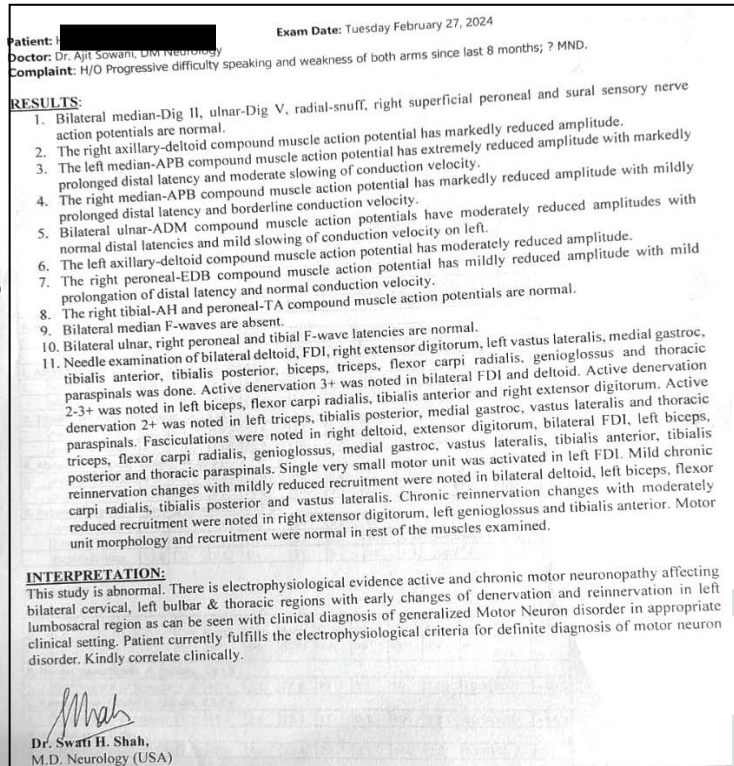


Figure 2



Figure 3: In the image (a) yellow arrow shows Before treatment patient was walking with support and In the image (b) After treatment patient is walking without support.

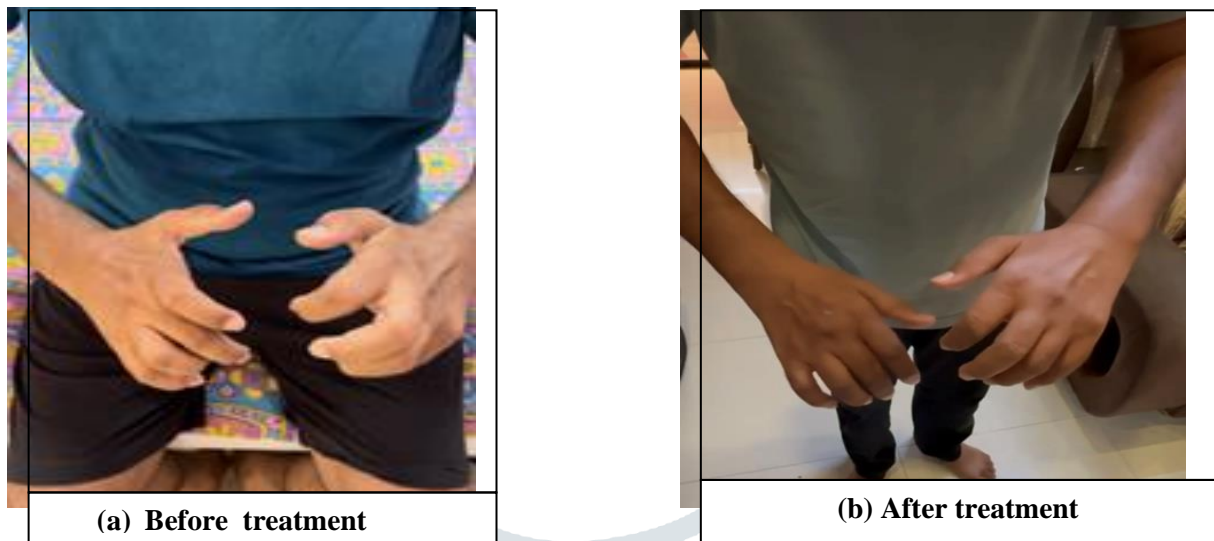


Figure 4: Spasticity Before and After treatment



Figure 5: In the image (a) range of motion of both arms Before treatment - 40 degree,
In the image (b) range of motion of both arms After treatment - 90 degree.