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Research Article

EFFECT OF DALAK (MASSAGE) IN THE REHABILITATION OF PATIENTS OF FALIJE NISFI (HEMIPLEGIA)

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ABSTRACT
Falije nisfi (Hemiplegia) is complete or nearly complete paralysis on one side of the body. Its incidence increases markedly with advancing age. With improvements in health care, more people survive strokes but many have to cope with the physical, psychological, social and functional sequelae, resulting in increased personal and public costs and a marked decline in their quality of life. The applied methods used in rehabilitation programs are, however, primarily based on clinical and empirical experience over a period of time; the scientific basis of these methods is rather poor. There is a need to develop alternate options for the rehabilitation of Falije nisfi. The objective of the study was to enable individual patients to achieve their full potential and to maximize the benefits from Dalak and unani medicines, in order to attain the highest possible degree of physical and psychological performance. Randomized controlled clinical trial was conducted in IPD and regimenal unit of NIUM hospital. Forty patients were divided, twenty each in test (Dalak) and control group. Dalak Motadil (moderate massage) was performed on patients in test (Dalak) group with Roghane Qust and control group patients were treated with unani medicine based on munzij, mushil and muqawwi aasab drugs. Both groups showed significant ($p < 0.05$) functional gain in Fugyl Meyer upper limb score, but gain in Dalak group is more than control group, both groups showed improvement in walking speed test and walking ability test but the difference is statistically insignificant.
Keywords: Falije nisfi; Dalak; Rehabilitation; Unani Medicine; Massage

INTRODUCTION

Falij (paralysis) is a word derived from an Arabic word Falaj, which means to make two equal parts or to divide.[1-4] According to majority of Unani physicians Falij nisfi (hemiplagia) is a condition in which vertical half either right or left side of the body except head is paralysed.[1,3,5-8] Falije nisfi (hemiplegia) constitutes the main somatoneurological disorder in about 90 % of patients with stroke.[9] Falije nisfi is caused by laisdar balgham (viscous phlegm) which obstructs the pathway of roohe hassasa (sensory pneuma) and roohe moharrika (motor pneuma) of particular organ resulting in paralysis.[1,3,8,10,11] Motor deficits which occur following stroke are characterized by paralysis (hemiplegia) or weakness (hemiparesis), typically on the side of the body opposite the side of the lesion.[12] The WHO defines stroke as rapidly developing signs of focal or global disturbances of cerebral function lasting > 24 h (unless interrupted by surgery or death), with no apparent non vascular cause. The disease is the third leading cause of death worldwide, and one of the most disabling chronic diseases in the adult population, with severe consequences for both patients and their families.[13] Worldwide, approximately 20 million peoples suffer from stroke each year, of them 15 million survive and 5 millions are disabled. The number of global deaths is projected to rise 6.5 millions in 2015.[14] The global burden of disease (GBD) study reported 9.4 million deaths in India, of which 619000 were from stroke. The disability adjusted life year (DALY) that were lost amounted to almost 28.5 million nearly 6 times higher than due to malaria.[14] Owing to the higher incidence and disabilities, the researchers of various systems of medicine are concentrating on safe and effective method of rehabilitation to reduce the number of disabled people in the community following stroke. Modes of rehabilitation that offer efficacy, and are easily accessible without causing much financial burden to the patients are given the priority. Application of Dalak (massage) in Falije nisfi has been mentioned in Greek, Egyptian, Arabic, Chinese and Indian medicines. Greek and Arab physicians like Buqrat, Jalinoos, Zakaria Razi, Ibne Sina, Ismail jurjani etc have mentioned about application of Dalak with hot and dry oils after Tanqiya (evacuation) of morbid matter for the limitation of disability in the patients of falije nisfi. Razi mentioned the use of Roghane qust on paralyzed part and vertebrae.[15]

MATERIALS AND METHODS

Present study is a randomized control clinical trial to investigate the role of Dalak (massage) in Falije nisfi (hemiplegia). After ethical clearance from the institutional ethical committee of NIUM Bangalore, India study was conducted. Patients of either sex, with a clinical diagnosis of stroke, with stable general condition, less than 75 years of age, with unilateral weakness or paralysis and who had previously been independent in the community were included in the study. Patients with loss of consciousness, with signs and symptoms of raised intra cranial pressure, failure to give consent, uncontrolled hypertension and diabetes, with other neurological impairments such as traumatic brain injury, multiple sclerosis, Parkinson's disease or tubercular meningitis, arthritis, seizure, etc. were excluded from the study. After getting informed consent patients were randomly allocated into control and test (dalak) group. Test group was rehabilitated with Dalak motadil (moderate massage) with Roghane qust on alternate day for 2 months. Control group was treated with traditional Unani oral formulation based on munzij and mushil followed by muqawwie aasab drugs. The study was completed within a period of 18 months from December 2006 to June 2008. Patients were assessed for physical dysfunction by the FIM™ instrument 1-3, upper limb function through Fugyl Meyer scale and dysfunction of gait through measuring speed and observing balance for

about 10 m of walking. Functional independence measure (FIM) consists of 18 items (13 motors, 5 cognitions) examining functional areas of self care, sphincter control, transfers, locomotion, communication and social cognition. Patient's performance on 18 activities was rated on a 7 level scale, with 1 indicating total assistance and 7 indicating complete independence. Motor assessment of upper limb was performed with upper limb subset of the Fugyl Meyer scale, which was prospectively collected for all patients in a standardized manner on admission and at discharge. The upper limb motor subset is composed of test for deep tendon reflexes, synergistic mass movements, fine isolated movements and coordination testing. Maximum upper limb score is 66, score ranged from 0 (plegic) to 56 (normal). A three point ordinal scale is used to measure impairments of volitional movements with grades ranging from 0 (item cannot be performed) to 2 (item can be fully performed). The gait speed of hemiplegics with residual gait deficit was assessed over an 8 week period starting as soon as the patients became ambulatory. For the measurement of gait speed the time taken by the patient in walking 10 m at a comfortable and at a maximum pace was noted with a digital stop watch that registered time in 1/100 of a second. The stop watch was manually initiated at the go instruction and stopped when the subject crossed 10 m mark this was repeated for three times to reduce the measurement error of time walking test and the patient was rested for 1 minute between each test, no encouragement to facilitate performance during a walking session was permitted. The evaluator walked beside the patient for safety reasons. Gate speed was calculated in terms of meters per seconds. Bed ridden Patients were first mobilized by rolling and our first aim was to make them sit independently, then they were trained for standing without any support for at least 2 minutes. After this early weight transfer on the affected side followed by locomotor training. Patients who were able to walk independently for 10 m were assessed for temporal measurement of variables, but some of the bed ridden patients who were very low scorer in FIM were not fit to be assessed for gait assessment. The mean difference of the scores for walking ability, FIM score for physical dysfunction Fugyl Meyer scores for upper limb function, walking speed test were analyzed and compared using tests of significance and $p < 0.05$ was considered significant.

RESULT AND DISCUSSION

Table 1: Comparative effect of treatment options on Fugyl Meyer scores (Mean ± SD)

Group	Before treatment	after treatment	p value
Dalak group (N = 20)	14.60 ± 7.556	25.15 ± 8.725	< 0.001
Control Group (N = 20)	14.80 ± 6.50	18.05 ± 7.688	< 0.001
t value	0.08968	2.73	
P value	0.921	0.0095	

Table 2: Intergroup variations of Fugyl-Meyer scores

Group	Mean BT	Mean AT	Total gain
Dalak group	14.60	25.15	10.55
Control group	14.80	18.05	3.25

Table 3: Comparative effect of treatment options on FIM scores (Mean ± SD)

Group	Before treatment	after treatment	p value
Dalak group (N = 20)	83 ± 12.044	99.25 ± 13.645	< 0.001
Control Group (N = 20)	84.05 ± 10.013	94.65 ± 10.713	< 0.001
t value	0.2998	1.186	
P value	0.7660	0.2431	

Table 4: Intergroup variation of FIM score

	Mean BT	Mean AT	Total gain
Dalak group	83	99.25	16.25
Control group	84.05	94.65	10.60

Dalak group showed more functional gain than control group.

Temporal measurement of gait

Table 5: Independent walking ability Test

Group	Before treatment		After treatment		p value
	NAW	Walk	NAW	Walk	
Dalak group (N =20)	14	6	9	11	0.063
Control Group (N = 20)	15	5	12	8	0.25

Mc Nemar test was applied to test the change in not able to walk to able to walk before and after rehabilitation

Table 6: Walking speed (Mean ± SD)

Group	Before treatment	After treatment
Dalak group (N = 6)	38.22 ± 55.21	50.35 ± 53.95
Control Group (N = 5)	10.678 ± 2.58	17.894 ± 4.22

N = Number of patients eligible for walking speed test

Study was carried out in two groups of patients test and control group, having 20 patients in each and treated with Dalak and Unani drugs respectively. On completion of eight weeks rehabilitation, the response was measured by Fugyl-Meyer upper limb score, FIM Instrument, Independent Walking Ability Test and Walking Speed Test. Maximum numbers of patients (19, 31.66 %) were in the age group of 50 -59 years, i.e. sine kahoolat. In sine kahoolat innate heat of the body begins to decrease and burudat increases which change the mizaj of persons to Barid Ratab. Hippocrates and Galen have similar opinion that Falij is common among age group of 40 to 60 years. The reason for the above is accumulation of barid khilt (cold humor) in brain, which on exposure to heat liquefies and descends on the site of the origin of the nerves.[16] Data from the Framingham study indicates that stroke incidence doubles for each decade after 55 years. A study "Epidemiology of stroke" (1998) reports that Cardiac failure; coronary heart disease, any cardiac arrhythmia and atrial fibrillation were more common in the older age group, which are responsible for stroke in older age group.[17] Thus our findings are in consonance of the descriptions of Unani physicians and also with the recent research studies. Our study population comprised predominantly of males 83.3 %, while remaining 16.66 % were females. The male: female incident stroke ratio varies from 1.39 (Framingham study) to 2.4 (MONICA).[18] Our results are in accordance with Framingham and (WHO) Monica study. Most of the strokes have been reported due to

infarction, and most infarcts are due to atherothromboembolism.[19] Men are more prone to atherosclerosis because of associated risk factors like smoking, hypertension, alcoholism and dyslipidemia are high in them.[20] Maximum patients, 65 % were found to be of phlegmatic temperament, the next common was sanguine temperament with 23.3% whereas 11.66 % of patients were with bilious temperament. It is mentioned that Falije nisfi occurs due to lazij balgham (thick phlegm) which obstructs the majari (vessels) of brain.[11] This study demonstrated a significant improvement in the patients of Falije nisfi subjected to Dalak therapy, as mean score recorded after rehabilitation was significantly high as compared to before rehabilitation scores. Mean Fugyl Meyer score before rehabilitation was 14.60 ± 7.556 which increased to 25.15 ± 8.725 ($p < 0.001$) when recorded after rehabilitation (Table 1). The total mean functional gain in test (Dalak) group is 10.55, which is higher than control group (Table 2). Sensory impairment was significantly improved in test (Dalak) group as compared to control group. The quantitative characteristics of FIM in test (Dalak) group showed significant improvement after rehabilitation as compared to before rehabilitation. Mean FIM score before rehabilitation was 83 ± 12.044 and after rehabilitation it was found to be increased to 99.25 ± 13.645 ($p < 0.001$) (Table 3). But in inter group analysis we found that total mean functional gain in FIM score was 16.25, which is more than control group (Table 4). In test (Dalak) group there was no statistically significant increase in the number of patients who are able to walk from their previous state of unable to walk (Table 5). They also showed improvement in speed of the patient who were eligible in that particular criterion. The mean speed increased from 38.22 ± 55.21 m / min in pre rehabilitation phase to 50.35 ± 53.95 m/ min in post rehabilitation phase (Table 6). Above results showed significant improvement in Fugyl Meyer score, FIM score, improvement in speed of the patients and little improvement in independent walking ability by Dalak with Roghne qust in Falij (paralysis).[1,2,3,7,11] The findings are confirmatory with these descriptions. Dalak increases the local temperature; it liquefies and removed the laisdar and munjamed madda from the aza'a responsible for spasticity. Goats (1994) also mentioned that various studies showed Dalak (massage) reduces the spasticity by increasing the local temperature, vasodilatation, increasing the rate of blood flow, cardiac stroke volume, which in turn improve circulation.[20] Research has also indicated that massage induces a fall in blood viscosity, haematocrit count and plasma viscosity, which results in an increased perfusion of blood with plasma fluid.[22] Mario paul cassar mentioned that Dalak stimulate neuromuscular system within the flaccid muscles and strengthen their contractions. Dalak also improves nutrition to the muscles and increases drainage of toxins, thus improves the motor and sensory functions.[23] In this study, Roghan qust was used for Dalak. It has been described to stimulate the nerves, gives intense warmth to the nerve and muscles and absorbs humors from the deep parts of the body.[24-29] All these actions of the Roghane qust improve the efficacy of Dalak. In the view of the findings discussed above it can be concluded that Dalak is an important and effective regimen for the rehabilitation of patients of Falij. The control group was treated with Unani formulation containing drugs that are ascribed to be munzij (concoctive) and mushil (purgative). This treatment was followed by another compound drug categorized to be muqawwi aasab (nerve tonic). The control group showed significant improvement in Fugyl Meyer score after rehabilitation. Mean fugyl Meyer score before and after was found to be 14.80 ± 6.510 and 18.05 ± 7.688 ($p < 0.001$), respectively (Table 1). On inter group comparison control group showed 3.25 total functional gains which is less than test (Dalak) group (Table 2). Control group showed significant improvement in FIM score after rehabilitation. Mean score before rehabilitation was found to be 84.05 ± 10.013 which increased to 94.65 ± 10.17 ($p < 0.001$) (Table 3). While in total mean functional gain was 10.60 which were quite less than Dalak group (Table 4). Control group showed no significant increase in number of patients who were able to walk from the patients who were unable to walk independently in walking ability test (Table 5) but statistically significant improvement in speed of the patients who are able to walk independently before treatment (Table 6). Although, the Unani drugs produced little lesser effect than Dalak, but effect was statistically significant when compared with before treatment scores. Munzije balgham drugs increases innate heat of the body therefore liquefies the laisdar and munjamid madda responsible for spasticity. These drugs also improve the flow of humors in the body. Mushil advia (purgatives) remove the morbid or superfluous matter from the body. Muqawwie aasab advia stimulate the neuromuscular system and also strengthen the contractions. These drugs (munzij, mushil, and muqawwie aasab) produce generalized effect of lesser intensity as compared to dalak. A more pronounced effect is expected if the drug is used along with dalak. After rehabilitation Dalak group achieved more functional independence than the control group.

CONCLUSION

On the basis of the findings of the study, it is concluded that both regimens are effective in the rehabilitation of Falije nisfi. However, the effect of Dalak is more significant in total functional gain and independent walking ability than control group. This study is probably one of the earliest studies that demonstrated Dalak or Munzij Mushil therapy can be useful in rehabilitation of Falije nisfi. By demonstrating significant responses this study will certainly open new frontier for the development of new therapeutic regimen for some important chronic neurological disorders. This study will also pave the way for the delivery of an effective, safe, easily accessible and cost effective therapy for the patients of neurological disorder. However, further trials are needed to ascertain its role in specific groups.

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