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RESEARCH ARTICLE

CORE STRENGTHENING ON STROKE RECOVERY – 1 YEAR FOLLOW UP

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ABSTRACT

Stroke rehabilitation varies with age, gender, etiopathogenesis, region affected in the brain, lesion of middle cerebral artery infarct with core strengthening exercises were analyzed with one year follow up from 02.09.2018 to 30.09.2019 as previously these exercises were used only in lowback rehabilitation. This research presentation, an unique patient specific exercises approach with scientific evidence, her clinical prognosis gets more highlighted.

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INTRODUCTION

- Stroke with a high prevalence and long term disabilities is a major health problem in the world (Chen etal 2015) with about 2 million people suffer each year (Chen etal 2015). Impairments including loss of strength sensation, coordination abilities which result in walking difficulties, balance disorders and limb function disturbance in 70 – 80% of stroke patients (Bower etal 2015), which affects QOL and leads to a huge economic burden an society (Sun etal 2016). MCA is the largest cerebral artery and commonly affected by CVA (Jauch etal 2019)
- Exercise therapy a commonly used methods that bring greater benefits in physical function for stroke patients (Morris etal 2004) and their effect in clinical studies (Kawakami etal 2015) where as core stability exercises were shown to improve dynamic standing balance, functional autonomy, static balance, flexibility and stability (Miyake etal 2013). Few researches were done on the effects of core strengthening among stroke patients also clinical prognosis based on cerebral area affected were less reported, hence this research gets more evident.

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Aims & Objective of this original one year follow up of a stroke subject where core strengthening exercises was analyzed on obesity and her QOL

Background Information: 55 year female home maker, mother of two adults, mesomorph

C/O

Right arm and leg weakness on sudden onset in 21.07.2018
Known HT for 10 years, DM for 8 years

NMRI on 21.07.2018 reveals left MCA, corona radiate infarct, multifocal narrowing of M1, M2, M3 of left MCA, was getting treated with On T. Ecosprin – 7.5 mg, T. Rosuvas – 20 mg, T. Citistar – 500 mg, T. Glycomet – 500 mg, T. Telma – 40 mg, T. Minipress – 5 mg, T. Thyronorm – 25 mg, T. Benlong – 4 mg

H/O Had a fall at her residence in February 2019

O/e

- Ambulant with fear of fall and needs physical support
- Increasing spasticity of right leg > arm
- Self care – partially dependent
- BMI - 24 Kg/m^2 WC – 100cm
- Moderate exercise tolerance

- Cognitive level is good with greater adherence to physical therapy
- Transfers in bed independent, but for other activities such as sitting to standing, walking, partially dependant
- Balance in high sitting, good, standing, moderate

MATERIALS AND METHODOS

Procedure

- The subject was treated with core strengthening exercises in supine lying, prone, quadruped, sitting and standing, which were gradually progressed and an inflatable physioball was used to assist her activities
- She was getting treated in Chennai by the author with a weekly frequency of 3 times.
- Weight bearing of right lower extremities and planti grade assistance were given more important in all postures
- Selective closed kinematic exercises were used for facilitation of right arm and leg
- Symmetry and alignment with regard to functional activities were maintained and facilitated
- Electrical stimulation and splints earlier used were discontinued, each session lasting for 30-40 minutes from 02.09.2018 to 30.09.2019 her prognosis were analyzed and discussed as below:

RESULTS

Table of pre and post results on obesity, Barthel index, cadence, modified ashworth scale

	WC cm	Barthel ADL Index	Cadence	Modified Ashworth Scale
Pre	100 Decreased by 8%)	11	20	3
Post	92	17	50	2

DISCUSSION

Clinical Prognosis her present condition after two months of regular physiotherapy

- Able to walk independently in closed environment with minimal fear
- Weight bearing on to right leg has increased
- Becoming more independent for self care activities
- Transfers from lying to standing, walking she is mostly independent
- Cadence has increased from 20 to 50 minute
- Degree of spasticity has decreased

Research Questions to be answered:

Core exercises influence in functional recovery of stroke subjects

- The core is control to almost all kinematic chains in the human body (Canabas Valdes etal 2015) with the abdominals par spinals, gluteals, diaphragm, pelvic floor, hip girdle, musculature makes up the largest part of the body and plays on controlling movement of daily activities (Yu etal 2013).
- Core strengthening exercises have many advantages in rehabilitation, which can improve the activation and concentration of abdominal and multifidus muscles facilitating the function and movements of the limbs (Hung etal 2015)
- Yu etal 2013 among 20 stroke, core exercises and conventional exercises, where trunk impairment scale score and muscle activity of the lower trunk has increased in core exercises subject
- Cabanas – Valdes etal 2015 among 80 stroke subjects were treated with conventional exercises, but experimental subjects were treated along with conventional, core stability exercises were used, where the conventional with core exercises groups benefited more functionally.
- Core strengthening were mainly used in this subjects rehabilitation as supported by the above research reports, this stroke subject has obtained better balance, trunk control as evidenced with her confidence, balance while walking which has also decreased spasticity, reduction in obesity by 8% as displayed in table: 1

Recovery pattern in MCA infarcts, corona radiata

- Infarcts of corona radiata and MCA where associated with emotional disorders as a result of stroke corona radiate has 9% among cerebral infarct, 81% had with neuropsychological symptoms, pure motor HP among 45% with facial paralysis, dysarthria among 59% risk factors Included DM, HT and evaluated triglycerides as reported by (Rinso Shinkeigaku etal 1989) among 53 patients of corona radiate infarct.
- Sun etal 2016 where 40 hemiplegic form January 2014 to February 2015 were divided in to two groups one with conventional, other with core stability exercises for 6 weeks BBS (Bergs balance Scale) and barthel were better with core stability subjects. Emotional liability – emotionalism, pathological laughing, crying and (Emotional Incontinence) EI- a common complications in stroke with 15-20% prevalence (House etal 1989 & Kim etal 2002)
- Post stroke depression (PSD) was associated with corona radiata infarction (Vataja etal 2001), with risk factors, such as increased stroke severity, post stroke cognitive or physical impairment, history of depression (Johnson etal 2006) and most EI patients also had PSD which is related to ADL (Anderson etal 1995)
- In concurrence with above researches this stroke subject has an increased spasticity, depression and emotionally disturbed, as denoted by marginal recovery after an year with inadequate hand function, fear of falls, unduly motivated.

Conclusion

In practical, core strengthening exercises were widely used for low back rehabilitation, where as its role along with other concepts of stroke treatment were under researched, hence the outcome of the study gets more prominent and needy but can further be validated with larger sample size and longer variables to used to analyses their efficacy are recommended.

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