

The effects of physical therapy on exaggerated muscle tonicity, balance and quality of life on hemiparetic patients due to stroke

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Abstract

Objective: To determine the effects of physical therapy on balance, exaggerated muscle tonicity and quality of life on patients with hemiparesis.

Methods: This quasi-experimental study was conducted in 2011 among male hemiparetic patients secondary to stroke, at a physiotherapy centre in Neyshabur, Iran. Twenty-four patients were randomly assigned to two equal groups representing the cases and the controls. The cases were assigned to do the practical protocol for 4 weeks. To collect the data, Berg Balance Scaling, Modified Ashworth Scale, Barthel Activities of Daily Living Index and demographic questionnaires were used. Paired and un-paired t-tests were used to analyse data. All analyses were done on SPSS 16.

Results: The two groups were similar before intervention. Post-test analysis showed that the average balance and quality of life significantly improved ($p < 0.001$) among the cases, and the quadriceps muscle tonicity decreased ($p < 0.001$). Among the controls, there was no significant change between pre-test and post-test readings.

Conclusions: Physical therapy can enhance balance and quality of life of hemiparetic patients and reduces their exaggerated muscle tonicity.

Keywords: Hemiparesis, Physical therapy, Quality of life, Muscle tonicity. (JPMA 63: 735; 2013)

Introduction

Hemiparesis, or unilateral weakness of the body, most commonly results from stroke in humans.¹ In most cases, the major causes are the corticospinal pathway involvement, and the diseases damaging the motor centres or causing disorders in the brain. Stroke is one of the major causes of death and disability in almost all communities.² After the heart diseases and cancer, it is also the third leading cause of death and the most common cause of disability in adults.³ About 30 to 40 per cent of people who survive a stroke, suffer from some severe disability.⁴

Although the intensity and variety of disorders in hemiparetic patients are related to the location and extent of the lesion, motor dysfunction remains its major clinical sign.⁵ A variety of therapeutic interventions have been explored in several studies for patients with hemiparesis, including stretching exercises, balance and

coordination,^{6,7} functional mobility and massage,^{8,9} strength training (isometric, isotonic, isokinetic),¹⁰ aerobics,¹¹ gait training, treadmill training and stepping exercises.^{12,13} The primary goal of physical therapy in these patients is to enable them to perform daily activities independently and to remove disease-related symptoms. Exercise is one of the few treatments which is accessible and has no side effects. Although many studies were conducted to find the effects of various methods of physical therapy on decreasing aggravated muscle tonicity and improving balance and walking indexes,¹⁴⁻¹⁷ but there is no consensus on common methods of physical therapy in the treatment of the disorders associated with hemiparesis secondary to stroke, especially in the chronic stage. The aim of this study was to consider the effect of 4 weeks of physical therapy on male hemiparetic patients.

Patients and Methods

The quasi-experimental study was conducted in 2011 and included all male patients referred to Mohammed Ali Fayaz Bakhsh Physiotherapy Centre in Neyshabur city, Iran. The subjects had a stroke at least a year before the study, were aged between 40 and 60 years, had been diagnosed with hemiparesis secondary to stroke, had the ability to stand feet apart with open eyes for at least 30 seconds, could understand the instructions, had the ability to change direction, and were not part of any out-

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