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Orthopaedics and Rheumatology for Physiotherapists

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Original Article

The effect of a rehabilitational sliding machine and conventional neurological physical therapy on the balance of patients with hemiplegia

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Abstract. [Purpose] The purpose of this study was to investigate the effects of exercise using a rehabilitational sliding machine and conventional neurological physical therapy on the balance of stroke patients. [Subjects] Forty patients with hemiplegia resulting from stroke were divided into a rehabilitational sliding machine exercise group (ST group, n=20) and a conventional neurological physiotherapy group (C group, n=20). [Methods] The STG underwent training with a rehabilitation sliding machine for 30 minutes per day, five times per week for eight weeks. The CG underwent training with a conventional neurological physiotherapy for 30 minutes per day, five times per week for eight weeks. [Results] The balance ability of both groups significantly improved. Although there were significant differences between the groups, the CG showed weight bearing on the affected side, an anterior range within the stability limits standing, and a posterior range within the stability limits standing. [Conclusion] The results of this study suggest that conventional neurological physiotherapy is a more dedicated, effective intervention than rehabilitational sliding training methods.

Key words: Hemiplegia, Rehabilitational sliding machine training, Conventional neurological physical therapy

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INTRODUCTION

A stroke is a very serious disease and is accompanied by motor disturbance, sensory disturbance, perceptual disturbance, language disturbance, cognitive disorder, and urinary incontinence according to the area of the brain lesions¹⁾. Hemiplegia is commonly associated with a decrease in balance ability. The balance of stroke is an important factor that can impede standing or gait, and their postural sway is twice as high as that of healthy people in their age range²⁾. The limit of stability (LOS) of stroke patients is defined as a decrease in the maximal distance to the center of gravity while maintaining balance without detaching the feet from the ground³⁾.

Among the rehabilitation treatment methods for stroke patients, exercise is essential for functional recovery. There are many conventional treatments, such as neurodevelopmental treatment and sensory stimulation, which are designed to make patients shift their weight to the affected side. Currently, the exercise treatment that makes patients conduct diverse functions by stimulating normal exercise modes is performed in physical therapy rooms, and exercise treatment programs include a range of motion exercises,

extension exercises, and muscle strengthening exercises⁴⁾. Moreover, a lot of equipment is available to improve the functions of stroke patients. In order to improve the muscle strength of the lower extremities of stroke patients, weight equipment⁵⁾, elastic bands⁶⁾, and isometric equipment⁷⁾ have been employed. Using a tilt table composed of a rail system and a carriage with wheels, Trees et al.⁸⁾ applied a weight load exercise to four patients with burns who had difficulty with weight load training in a standing position. They reported improvement in lower extremity muscle strength of the patients. Byun et al.⁹⁾ applied a rehabilitational sliding machine to the treatment of patients with hemiplegia resulting from stroke and reported that their muscle strength, spasticity, gait ability, balance ability, and daily activities improved.

Therefore, many treatment methods for reduction of problematic factors and improvement of balance and gait ability have been studied and developed. There are diverse methods for treatment of patients with hemiplegia resulting from stroke, and although many efforts have been made to improve the effect of each treatment method, research has not shown whether one treatment method is superior to others¹⁰⁾. Few studies have applied and compared treatment method using different equipment and existing neurological rehabilitation exercise. Therefore, it is necessary to compare the effects of exercises using equipment and one-on-one therapeutic exercises in stroke patient therapy.

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Research Article



Chest physiotherapy techniques in neurological intensive care units of India: A survey

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Abstract
Context: Neurological intensive care units (ICUs) are a rapidly developing sub-specialty of neurosciences. Chest physiotherapy techniques are of great value in neurological ICUs in preventing, relieving, or reversing the impairments caused due to neurological disorder and ICU stay. However, chest physiotherapy techniques should be modified to a greater extent in the neurological ICU as compared with general ICUs.
Aim: The aim of this study is to obtain data on current chest physiotherapy practices in neurological ICUs of India.
Settings and Design: A tertiary care hospital in Karnataka, India, and cross-sectional survey.
Subjects and Methods: A questionnaire was formulated and content validated to assess the current chest physiotherapy practices in neurological ICUs of India. The questionnaire was constructed online and a link was distributed via Email to 185 physiotherapists working in neurological ICUs across India.
Statistical Analysis Used: Descriptive statistics.
Results: The response rate was 44.3% (n=82). 13% of the physiotherapists were specialised in cardiorespiratory physiotherapy and 35% were specialised in neurological physiotherapy. Clipping, vibration, postural drainage, aerosol therapy, humidification, and suctioning were used commonly used airway clearance (AC) techniques by the majority of physiotherapists. However, devices for AC techniques such as Flutter-Acupella, and standard positive expiratory pressure devices were used less frequently for AC. Techniques such as autogenic drainage and active cycle of breathing technique are also frequently used when appropriate for the patients. Lung expansion therapy techniques such as breathing exercises, incentive spirometry exercises, and positioning, proprioceptive neuromuscular facilitation of breathing are used by majority of physiotherapists.
Conclusions: Physiotherapists in this study were using conventional chest physiotherapy techniques more frequently in comparison to the devices available for AC.
Keywords: Cardiorespiratory physiotherapy, critical care units, cross-sectional survey, India, neurological intensive care unit, online survey



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Introduction

Neurological intensive care unit (ICU) is a rapidly developing sub-specialty of neurosciences. Intensive care management includes vigilant nursing care, medical care and physiotherapy, irrespective of their specialty such as neurological ICU, cardiac ICU, or trauma ICU.¹⁾

Various cardiorespiratory complications may be encountered in severely head injured patients due to inability to maintain airway, hypoventilation and direct injuries to the chest. Pneumonia can occur in about 60% of the patients with severe head injuries due to prolonged intubations, mechanical ventilation and inability to maintain airway.²⁾

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The physiotherapist has an important and a diverse role within the ICU as a member of the multidisciplinary team in managing the cardiorespiratory complications and to maintain the functional abilities.³⁾ Chest physiotherapy has conflicting data about its effect on intracranial pressure (ICP) in neurological patients with

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