Caring Stroke Patients with Musculoskeletal Problem: A Narrative Review

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ABSTRACT

Background: The purpose of this paper is to narratively review the literature on caring for stroke patients with a musculoskeletal problem which involves rehabilitation of nursing and health care. Through the review, this paper addresses five questions: What are the typical difficulties of a stroke patient? What are the effects of a stroke on the musculoskeletal system? How to take care of musculoskeletal problem and pain? What is good musculoskeletal care for patients with stroke? How to take care of the musculoskeletal problem through active rehabilitation? **Method:** The relevant articles published between 2010-2020 were identified through searches in PubMed, Google Scholar, CINAHL, PsychInfo and by inspecting the reference list using keywords of 'stroke' and 'musculoskeletal'**.** **Result:** A total of 19 selected address this topic and consequently answer the questions posed. Findings flow with the typical difficulties of a stroke patient, the effects of a stroke on the musculoskeletal system, caring for musculoskeletal problem and pain, good musculoskeletal care for patients with stroke and caring for the musculoskeletal problem through active rehabilitation. **Conclusion:** This paper highlights that stroke patients with the musculoskeletal problem have restricted day-to-day movement functions and needed interdisciplinary care approaches from nursing, physical and occupational therapies, and other health care professionals. Stroke patients may need a structured programme to improve the outcome of stroke rehabilitation for the musculoskeletal problem.

Keywords: Care, Musculoskeletal, Nursing, Rehabilitation, Review, Stroke

INTRODUCTION

Stroke is defined as a common acute cerebrovascular disease that is due to the rupture or occlusion of an acute cerebrovascular vessel resulting in local or whole-brain neurological dysfunction for more than 24 hours or death (1). Classification of the stroke mechanism is based on the presence of risk factors for stroke (pre-existing illness or circumstance that is epidemiologically related to stroke) and aetiologies (mechanism-induced disease) that involve the cause of stroke in a patient (2). However, the same patient also has more than one risk factor and aetiology and can be related to recurrence. After cancer and coronary heart disease, stroke is reported the third most common cause of death in many countries (3). The occurrence and prevalence of strokes included 69.6% and 77.8%, age-specific stroke prevalence in men aged ≥40 years of age substantially higher than the prevalence in women (P<0.001) and the most common risk factors among stroke patients were high blood pressure (88%), smoking (48%), and alcohol consumption (44%) (4). Thus, this narrative review paper aimed to address five questions: What are the typical difficulties of a stroke patient? What are the effects of a stroke on the musculoskeletal system? How to take care of musculoskeletal problem and pain? What is good musculoskeletal care for patients

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with stroke? How to take care of the musculoskeletal problem through active rehabilitation? The rationale of these questions is to highlight the needs of focussing musculoskeletal care among patients with stroke for better recovery.

METHOD

This is a narrative review that focuses on findings of topic interest. A search was conducted in Google Scholar, PubMed, CINAHL, and PsychInfo using the keywords "musculoskeletal" and "stroke". The search was based on studies between 2010-2020 and reported in English without restricting study design, or countries. The interest is defined as the caring of the musculoskeletal problem among patients with stroke with at least one musculoskeletal problem. After the articles were identified, information extracted from the selected studies included musculoskeletal problem and intervention. Researchers did not conduct a quality assessment but consider the findings of care, which are narratively reported. The relevant articles related to the musculoskeletal problem and patients with stroke were reviewed for discussion purposes only.

FINDING

A total of 19 articles were reviewed within the rehabilitative care address the musculoskeletal problem and fairly answer the questions posed. Many strategies for musculoskeletal intervention for patients with stroke were found and discussed under each research questions.

DISCUSSION

Typical difficulties of a stroke patient

A stroke patient will usually experience some disability in the first few weeks following an attack. The most common symptom after stroke is hemiparesis, which reported to affect around 80% of total patients (5). The majority of the stroke patient will recover in a short period, while some will have a long-term disability. Monitoring of stroke progress is important, depending on the level of consciousness. However, several studies reported that almost all stroke patients continued to unmet needs, particularly related to motor function (6,7). It is, therefore, reduces their quality of life by decreasing the independence in performing activities of daily (8). Major changes could be observed in their gait patterns, such as decreased walking speed, asymmetric walking, and diminished endurance due to damage to their motor functions, including decreased voluntary strength on the affected hand, muscle atrophy and spasticity. These will affect their ability to fulfil their daily living activities which using muscle strength or physical function. The impaired of activities of daily living may be predicted by advancing age, other co-morbidities (e.g. cardiac disorders, diabetes), extreme fatigue, poor balance and coordination, visual deficit, cognitive impairment, urine or faecal incontinence and late initial of activities of daily living (9). Most stroke survivors are relying on the support from family and friends for treatment and to meet their everyday tasks.

Effects of a stroke to the musculoskeletal system

A stroke involves urgent medical attention, is possibly fatal, and may impact the musculoskeletal system after the incident (10). Recent attention has been given to post-stroke sarcopenic symptoms, with more people surviving from strokes and lives longer (11). The prolonged effects and regaining process are depending upon the brain regions which were affected to the musculoskeletal system (12). A stroke usually affects one brain, where the body's right side is controlled by the left side of the brain and vice versa (13). This is because signals inadequately move from the brain to the body's muscles that lead to paralysis and muscle weakness.

A musculoskeletal problem after a stroke attack is typically seen in the upper extremity involving the back, arm, wrist and neck, sometimes symptomatic (14). These symptoms involving complicated regional pain syndrome, shoulder adhesive capsulitis, spasticity, and mechanical injuries. An interdisciplinary approach is crucial because one targeted therapy is not always effective. Musculoskeletal discomfort and complications are explaining that patients cannot regularly initiate or engage in routine everyday recovery activities following stroke.

Care of musculoskeletal problem and pain

Caring for the musculoskeletal problem among patients with stroke require various approaches. Among that, the early mobilisation and rehabilitation are important to ensure that the body ability to move (15). The side rails, proper use of a wheelchair, placing alarm at any equipment, proper positioning technique and scheduling of using commode, bedpan or urinal systematically are also important. Early mobilisation is helpful to prevent deep vein thrombosis and pulmonary embolism (16). Range of motion exercise is useful to apply immediately after 24 hours of stroke or using bilateral sequential compression device for prophylactic prevention to prevent further

complications (17). Thus, it is crucial to monitor for any signs of leg swelling or other related symptoms including calf pain, oxygen saturation or any difficulty in breathing (18).

Meanwhile, mobility limitation may be a direct effect of stroke prevention – an individualised physical activity routine can also be an effective part of pain control. The regular physical exercise demonstrated reduced pain severity, increased independence in everyday activity, decreased depressive symptoms and improved articular movement (19).

Pain after having stroke pain is due to the damage to the central nervous system and located on the neurological deficit region corresponding to a cerebrovascular lesion (12). Prevention may be achieved if sufficient information can help to provide suitable treatment strategies, such as a physical therapy intervention (20).

It has also been shown that patients with prolonged pain have poor health dependent quality of life after the stroke attack. A series of changes will be observed among certain patients' after the stroke mainly a few months or even years and may be linked to long-term pain. Effective therapies, such as methods of rehabilitation to manage pain and prevent the occurrence among patients with stroke, could encourage the improvement of motor control, while the pain increase, the less motor activity is observed (20).

Post-stroke pain effects also reduced quality of life. Most of the factors associated with more frequent pain were treatable, which highlights the importance of structured follow-up which takes pain into account. Participants with reported more pain substantially reduced their wellbeing recovery status, and have a poorer health-related quality of life compared with those with less frequent pain (19). These findings highlight the need for standardised follow-up after stroke, where people with strokes are actively questioned about pain and need to be treated appropriately (21).

Good musculoskeletal care for patients with stroke

Good musculoskeletal care for patients with stroke could be contributed by many different factors. Evidences have shown that fatigue, strength, and motor function play a crucial role in restoring the activities of daily living among stroke patients (22,23). Their mobility is frequently obstructed by their inability to manage barriers at surrounding areas of home and physical impairments (24). Repetition of performing activities of daily living activities in the home setting seemed to have good result of improvements in the patients' balance, mobility, and ability to self-manage. A rehabilitation programme is also compromised because of financial burden, logistical hurdles, social support and emotional reasons (25). Thus, home-based programmes of rehabilitation and self-management have become apparent as an appealing option among stroke patients. Services in advanced stroke rehabilitation have a significant impact on the improvement of everyday performance particularly fulfilling the needs of daily living. The teamwork, with the more favourable, focused hours of counselling, were the main positive predictor factors, while severity and injury level are the opposite way (26).

As many patients with stroke relying on their family members and friends, it was reported that intervention facilitated by the caregiver can improve the recovery of physical functions among stroke patients (27). Thus, inclusivity of managing patient with stroke is critical to involve the caregiver. Meanwhile, the current trend of rehabilitation technology has emerged gaming activities using virtual reality for a patient with stroke and be portraying good result for upper limb dysfunction. The lost function is restored in the upper extremities, but it may not be easier to get back to normal functions for ambulation of lower extremities (28).

In clinical practice, many upper limb therapies are used, with diverging successes were reported. There is proof of benefit for some treatments such as mirror box therapy and constraint-induced movement therapy (29–31). Success is therefore limited to patients with some active movement in the wrist and hand, and not to other patients. Mirror therapy is again reported in another study to have an improvement for motor function after stroke (31).

Furthermore, early electrical stimulation of the wrist extensors and wrist flexors to prevent pain and contracture problems in the paretic bracelet after the stroke also serves as a way to help stroke patients (32). Moreover, another movement rehabilitation therapy using Wii-based for upper limb among chronic stroke patients also serves an alternative (33). Walking performances also were reported to improve through whole-body vibration combined with treadmill training (34). Thus, various alternatives are readily available to facilitate good musculoskeletal rehabilitation for stroke patients.

Caring musculoskeletal problem through active rehabilitation

Patients with stroke need the evaluations of activities of daily living, training, and adaptation to a new normal to return to the community which focus on achieving a better quality of life. Rehabilitation programme using a combination of elements from various approaches is proven to facilitate the process of improvement of movement and function after stroke. There is some suggestion that frequent treatment sessions may provide a beneficial effect with added benefit could be seen from time to time, with individualised management (18). Early initiation therapies after the stroke are assisted, with clear evidence that therapy intensity is a significant recovery factor (35). Current research findings suggest that there is no proof of a single rehabilitation approach is successful to help functional healing and mobility after a stroke. Therefore, it can be achieved by using evidence-based approaches and essential clinical reasoning to choose the most suitable therapies for a person with a stroke. The key implications for practice arising the need for health care professionals involved in delivering and promoting rehabilitation depending upon the assessment of the patient with stroke (36). The range of treatment should be considered, and evidence-based rehabilitation and critical assessment should be carried out. The current evidence indicates that there is no single approach is better than any others, which any approaches should be specified, customised and well-described and not restricted to some of selected approaches only (23).

CONCLUSION

Although this is a narrative review of a stroke patient with a musculoskeletal problem which produces certain limitation, it highlighted a significant impact of the stroke on the quality of life and function. There are several aetiologies and probably overlapping clinical symptoms, thorough assessment and treatment factors that can impact the musculoskeletal system should be routinely treated by healthcare professionals. Intervention for stroke survivors in order to fulfil their everyday needs should be emphasised. Further study to understand more specific problems, considering the full range of results, is required to avoid further accidents such as falls, minimise hospital admissions and social care services. Consequences of the musculoskeletal problem can affect patients with strokes of their psychological personality, social participation, mental and physical well-being can contribute to a reduction in their quality of life. Adequate services should be undertaken to ensure that follow-up tests retain benefits and prevent deterioration while promoting self-referral among stroke patients for a follow-up to a better outcome.

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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