CHAPTER I

INTRODUCTION

Approximately 40-80% of the hemiplegic patients experience shoulder pain (1), which can delay the rehabilitation process and results in decreased functional performance (2). The causes and managements of shoulder pain in patients with hemiplegia are not well established. Medical diagnoses of the shoulder pain in hemiplegic patients are normally based on the pathological structures. Aras et al. (1) demonstrated that hemiplegic shoulder pain (SP) were found to have more structural changes in several components of the shoulder joint complex as compared to those of no shoulder pain (NSP). However, the differences observed between these two groups were not statistically different (1). These results suggest that the medical diagnosis by identifying the pathological structures may not be sufficient for proper physical therapy diagnosis and management of shoulder pain in hemiplegic patient.

A number of impairments such as, impairments from muscular, structural and neural elements can contribute to the shoulder pain in patients with hemiplegia. Neural element means the control of movement which may be determined from the recruitment patterns of muscles during movement. However, the present study will not determined this motor control element.

It has been shown in patients with shoulder pain without neurological pathology that the muscular impairments, such as muscle strength and muscle length can cause abnormal resting alignment, which may lead and contribute to joint stiffness and abnormal

movement (2). Limited motion of the shoulder complex as well as disassociation of the scapulohumeral rhythm are often observed in patients with shoulder pain (2). Despite the supporting evidences of the association of muscular and structural impairments to the shoulder pain in patients with intact neurological function (3), it is not clear whether this association also presents in patients with hemiplegia. Although, this group of patients will normally have movement dysfunction, which is resulted from lesions of the central nervous system (4). Not all of patients with hemiplegia have shoulder pain. Examination of parameters related to the muscular and skeletal elements may help clarify the causes and management of hemiplegic shoulder pain.

To our knowledge, no comparison of the musculoskeletal elements has been made between hemiplegic shoulder with and without pain. Evaluations of the functional movement patterns, muscle strength, muscle length and flexibility, as well as alignment of the shoulder complex are basic essential elements of shoulder evaluation in patients with hemiplegia. Systematic evaluation of the musculoskeletal elements of the shoulder joint complex will allow us to identify the causes and the contributing factors of the shoulder pain in patients with hemiplegia. This information will, in turn, provide us with a better understanding of the hemiplegic shoulder and a guideline to create an effective physical therapy management specific to shoulder pain in hemiplegic patients.

Operational definition

1. Musculoskeletal element means parameters related to muscle length, postural alignment and muscle strength. However, in the present study, only muscle length and scapulohumeral alignment at rest and during passive elevation of the glenohumeral (GH) joint were determined. Muscle strength was measured indirectly using a functional movement scale.

2. Shoulder joint complex consist of the sternoclavicular, the acromioclavicular, the glenohumeral joints and the scapulothoracic (ST) articulations. However, in the present study, the GH joint and the ST articulation were focused. Because the GH joint and the ST articulation are important for scapulohumeral rhythm (SHR) during shoulder elevation. Individual who have abnormal movement pattern of these two joints will be at risk of shoulder pain.

3. Shoulder complex resting position means alignment or relative position of scapula and humerus during resting. Scapular horizontal and vertical position, scapular rotation, and humeral inferior displacement were determined.

4. Muscles length of shoulder complex is expressed in degrees that a joint is permitted to move when a muscle crossing the joint has influenced the movement passively.

5. Passive elevation of the GH joint means shoulder abduction or flexion movement, which is elevated by the examiner. In the present study, passive elevation of the GH joint in the scapular plane was measured.

Purposes of the study

Main purposes of the study

The main purpose of the study is to explore the musculoskeletal elements in hemiplegic shoulders with and without pain.

Specific purposes of the study

1. To compare muscle length of the shoulder complex in hemiplegic patients with and without shoulder pain.

2. To compare resting position of the shoulder complex in hemiplegic patients with and without shoulder pain.

3. To compare scapular alignment during passive glenohumeral elevation in hemiplegic patients with and without shoulder pain.

Hypotheses of the study

1. The muscle length of hemiplegic shoulder with pain will be different from patients without shoulder pain.

2. The resting position of shoulder complex in hemiplegic patients with pain will be different from patients without shoulder pain.

3. The scapular alignment during passive glenohumeral elevation in hemiplegic patients with shoulder pain will be different from patients without shoulder pain.

Advantages of the study

The results from the present study will expand the knowledge of musculoskeletal elements of the shoulder pain in patients with hemiplegia. This information will provide us a guideline to develop an effective physical therapy prevention and intervention program for the shoulder pain in patients with hemiplegia.