

CHAPTER I

INTRODUCTION

1.1 Rationale and Background

Scleroderma or Systemic Sclerosis (SSc) is a multisystem disease characterized by thickening of the skin, vascular insufficiency, fibrotic changes in the muscles, joints, and internal organs, and abnormal autoimmune activations (Varga, Abraham, 2007). Patients with Systemic Sclerosis (SSc) suffer from reduced quality of life (QOL) and disability, caused by skin, joint, muscle, and internal organs involvement. Based on the degree of skin involvement, skin changes usually involve the hands and extend to forearms, arms, face, and trunk (Li et al., 2008).

SSc can be divided into 2 subgroups: limited cutaneous SSc and diffuse cutaneous SSc. Limited cutaneous SSc is characterized by sclerodactyly or acrosclerosis, with distal involvement of the extremities (distal to the elbows and knees) with or without face involvement. This clinical picture comprises Raynaud's phenomenon, dysphagia, calcinosis cutis, and telangiectasis. It is slowly progressive and is frequently associated with anticentromere antibodies. The most severe complications are pulmonary hypertension and biliary cirrhosis.

Diffuse cutaneous SSc is more severe and shows proximal involvement of the extremities (proximal to the elbows and knees), trunk, or both. This subgroup is often associated with pulmonary interstitial fibrosis, renal crises, and gastrointestinal involvement (dysphagia, hypomotility, and other disorders). Moreover, it is frequently associated with Scl-70 (antitopoisomerase) and nucleolar autoantibodies (polymerase I and III, fibrillarin) (Li et al., 2008).

Raynaud's phenomenon occurs almost universally in systemic sclerosis and is manifested by episodic pallor followed by cyanosis and/or rubor of the distal parts of the digits after exposure to cold or emotional stress. It often predates other manifestations in the limited subtype and is frequently found concurrently in diffuse systemic sclerosis (Wigley, 2002).

Skin induration and joint and muscle involvement often lead to a progressive reduction of range of motion that is the major cause of rehabilitative problems. Approximately 90% of scleroderma patients have problem in hand functions from skin contracture and limit range of motion of wrist and phalanges (Casale et al., 1997). Open and ulceration wound of hand and pain with muscle weakness affect to performance and function of hand especially grasp and pinch objects (Silman et al., 1998).

Incidence of SSc in north east of Thailand is 10/million, ratio of female: male is 2/1 in age between 40-50 years old, and less common but high disability (Nilakanuwong, Prichawong, 2005). After approximately 5 years, the skin spontaneously softens. However, significant disability can appear from severe fibrosis of the hands. Finally, hand disability can result the reduction of quality of life (Khanna et al., 2007), mood disorders such as depression, loss of self respecting, (Evans et al., 2005) and high cost of treatment (Wilson, 1997). Early treatment and proper rehabilitation program against the development of fibrosis and contractures are needed in Patients with SSc (Mouthon et al., 2006). Nevertheless, few data are available in the literature to evaluate the efficacy of such interventions.

Despite the poor prognosis, in recent years impressive improvements in standard treatments have been made and an early aggressive treatment, as well as early diagnosis, is now possible. The therapeutic procedures are divided into 2 aspects, pharmacological (Sapadin, Fleischmajer, 2002) and non-pharmacological treatments (Antonioli et al., 2009).

The Pharmacological treatment of SSc is difficult and remains a great challenge to the clinician. Because the cause is unknown, therapies are directed to improve peripheral blood circulation with vasodilators and antiplatelet aggregation drugs, to prevent the synthesis and release of harmful cytokines with immunosuppressant drugs, and to inhibit or reduce fibrosis with agents that reduce collagen synthesis or enhance collagenase production.

The goals of non-pharmacological treatments are to promote independence in all functional activities while preventing loss of motion and strength. Rehabilitation should include general conditioning exercises that emphasize full range of motion and strengthening. Breathing exercises should promote full chest expansion and mobility of the chest wall. Heat in various forms, including paraffin baths and hydrotherapy,

may relieve symptoms and enhance mobility. In addition, available evidence base suggests manual therapy (MT) as effective in the treatment of SSc (Bialosky et al., 2008). Categorization of MT techniques can be divided into joint biased (manipulation and mobilization), soft tissue biased (massage), and nerve biased (neural dynamics). The purposes of MT in soft tissue are to improve blood circulation, decrease muscle spasm, re-align soft tissue, break adhesions, increase range of motion, remove cellular exudates, and relaxation. The most noticeable of MT, soft tissue biased subtype is massage.

Massage is an important procedure in non-pharmacological treatment. Various types of massage are used to improve hand functions in SSc such as Swedish massage, Bindegewebsmassage, and connective tissue massage. Therapeutic effects of massage have been found which include reduce pain, improve blood circulation, increase temperature, and promote flexibility. Patients with SSc have a dramatic decrease in cutaneous oxygenation due to vessel obliteration. Massage may mobilize skin fluids, and increase skin temperature by dilating microcirculation via a local reflex action. It may also have a local analgesic effect by increasing the pain threshold (Casale et al., 1997). The extremely low incident rates for massage injuries. The amount of cases of injury found is far too small to be statistically meaningful in estimating risk from massage, except to verify that it is negligible. An apparent correlation does exist only with depth and vigorousness of massage (Grant, 2003).

Traditional Thai Massage (TTM) has been employed in various conditions for a long time especially in Thailand. It has unique characteristics which include deep pressure on muscles and tendons and stretching to the shortened muscles. Its therapeutic effects have been found to be similar to other found of massages. From previous studies, skin induration and joint and muscle involvement often lead to a progressive reduction in range of motion that is the major cause of deformity especially hand deformity (Eisenberg et al., 2008). Interestingly, there is no evidence supporting the effect of TTM in hand of patients with SSc. Therefore, the effect of TTM on alteration of hand temperature and mobility in patients with SSc was investigated in this study.

1.2 Research Question

Does TTM has immediate and short-term effects on hand temperature and hand mobility in patients with SSc.

1.3 Objective of the Study

To determine the immediate and short term effects of TTM on hand temperature and hand functions in patients with SSc.

1.4 Benefits of the Study

1.4.1 To prevent hand disability in patients with SSc.

1.4.2 To modify TTM in patients with SSc.

1.4.3 To promote independent status and encourage self-respecting of patients with SSc.

1.4.4 To promote TTM for acceptance in scientific fields.

1.5 Conceptual Framework

