CHAPTER 1

Introduction

Headache is a common health problem affecting quality of life and imposes substantial medical cost. There is evidence suggesting that headache changes with age (1, 2). Cervicogenic headache, a secondary headache, has become more frequent in the elderly population, while migraine and tension-type headaches, a primary headache have decreased with age (3). The features of migraine are found to be less typical and more frequently associated with neck pain in older persons (1, 4). Additionally, a recent study has also demonstrated that characteristics of headache cannot be made from middle-aged or younger populations to headaches in the elderly (5). Elders with various types of intermittent headaches had reduction of cervical extension and the presence of cervical joint dysfunction (C0-3) compared to those without headache (5). A greater cervical musculoskeletal impairment was also found to be a generic feature of frequent intermittent headache in the elderly, not specific to cervicogenic headache as previously demonstrated in a middle-age/younger population (6). There were no between group differences in cervical joint position sense, static head-neck posture, cervical muscle strength, and cervical muscle control measured by the craniocervical flexion test (CCFT). However, some features of cervical musculoskeletal impairment have yet to be investigated in a study of Uthaikhup et al (5). Recently, studies in younger populations have demonstrated that patients with neck pain and headache had atrophy of suboccipital muscles and increase in fat infiltration in the deep cervical extensors (7, 8). Given the changes in the nature of headache and changes in muscle structure and function with age (1, 9), alteration in muscle morphology and muscle fat infiltration in elders with headache and neck pain may differ from the findings which have been demonstrated previously in younger persons. At present, there has been no research investigating changes in cervical muscle morphology and fat infiltration in elders with frequent intermittent headache. Further study in this area is required. Moreover, it has

been suggested that changes in the lipid concentration of the muscle tissue can help to promote a better understanding of the role of muscle fat accumulation (10). Thus lipid content in the cervical muscles should also be investigated in a study of headache.

Changes in the peripheral and central nervous system function with increasing age can also contribute to pain perception in patients with headache. A recent study of Uthaikhup et al (11) has investigated mechanical and thermal pain thresholds in elders with chronic frequent intermittent headache. The results demonstrated that generalized sensory hypersensitivity was not a feature of chronic headache in the elderly (11), which do not support the finding in younger populations with headache (12, 13). The authors have proposed that age-related changes in the peripheral and central nervous systems may be an important contributing factor to pain sensitivity in elders with chronic headache. However, it is noted that in Uthaikhup et al's study thermal pain thresholds were investigated only in the cervical region, but not in a remote site. Besides, it has been thought that suprathreshold stimulation is more sensitivity (14). Thus, a replicated study for investigating pain thresholds and further research to investigate changes in sensitivity to suprathreshold stimulation in elders with chronic headache are still required.

Evidence indicates that physiotherapy management methods such as manual therapy and therapeutic exercise are an effective management approach for headache associated with the neck (15, 16). Impairment in the cervical musculoskeletal function found previously in elders with headache has also implications for headache management choice (5). Physiotherapy treatment would be a safer therapeutic option and may have a beneficial effect for elders with headache who have neck pain and concomitant cervical musculoskeletal dysfunction. This is particular relevant as there are widespread concerns about medication overuse, adverse drug events and drug interaction in elders (17, 18). Also, physiotherapy may be a worthy treatment option particularly in elders with headache who do not respond well to medication. To date, there has been no trial which has investigated the effectiveness of physiotherapy treatment specifically for elders with various types of headache with associated neck pain and cervical musculoskeletal impairment. Thus, further clinical research is

necessary. The clinical trial may help guide management of headache in attempts to lessen medication use and cost in this population and importantly to enhance headache elders' function and quality of life.

As a whole, the first challenge of this thesis is to explore the extent of the impairments of cervical muscles (morphology, fat infiltration and lipid content), and pain sensitivity in elders aged between 60-75 years old with frequent intermittent headache. The next challenge is to investigate the efficacy of physiotherapy treatment in elders who have headache concomitant with neck pain and musculoskeletal impairment. The study stand to enhance better understanding of cervical musculoskeletal impairment (muscle morphology, fat infiltration, lipid content) and pain sensitivity in elders with frequent intermittent headache. Such a trial would also be an alternate strategy to help to better understand the role of cervical musculoskeletal impairment in elders' headache.



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