CHAPTER I

INTRODUCTION

1. Rationale

Lung cancer is one of the most lethal forms of cancer and the most common type of all cancers worldwide (1). In 2008, approximately 1.52 million new cases of lung cancer were diagnosed, followed by breast cancer and colorectal cancer, 1.29 and 1.15 million, respectively (2). Unfortunately, most lung cancer cases are detected at an advanced stage, resulting in a very poor prognosis (3-5). Consequently, mortality rates are higher than other types of cancer (2). In Thailand, lung cancer is the second most common cancer in men and the fourth in women (6). The highest incidence rate is in the northern region, specifically in Lampang followed by Chiang Mai (6). Maharaj Nakorn Chiang Mai Hospital, which is the tertiary hospital in Chiang Mai, reported that lung cancer is the most common cancer found in men and the third in women, however it is the leading cause of death for both genders (7).

Generally, eighty-five percent of lung cancer patients were diagnosed in the advanced or metastatic stages (8, 9). Consequently, the treatment protocols in these patients are limited in choice and effectiveness. Welch et al. (10) reported that five year survival rate of newly diagnosed patients is 14 %, with more than 80 % projected to die within one year (11). Currently, the most common option treatment in lung cancer patients is chemotherapy, both for Non-Small Cell Lung Cancer (NSCLC) and Small Cell Lung Cancer (SCLC), especially in the advanced stage (12, 13). The majority of studies have shown that chemotherapy was the most effective treatment in

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terms of increasing survival rates, decreased symptoms, and improved quality of life (QoL) (14-21).

Moreover, there are many reported adverse effects from chemotherapy toxicity and causes change from the micro level of molecular, pathophysiological to the macro level of physical and psychological including anemia, nausea and vomiting, loss of appetite, diarrhea, constipation, insomnia, hair loss, anxiety, and depression (22-29), with the most common side effect being fatigue and dsypnea (30-34). In addition, there are the adverse effects of chemotherapy on cardiorespiratory fitness by caused of cardiotoxicity and lung properties changed (35-40). Previous studies have consistently demonstrated the decreased diffusion capacity of lungs after chemotherapy (41-46). Whereas, pulmonary function tests (PFTs) such as FEV_1, FVC, FEV_1/FVC have demonstrated ambiguous results (16, 42-44). Nevertheless, patients who have responded to chemotherapy tend to increase PFTs and declined in patients who have not responded (16, 42-44). Also the effect of chemotherapy on exercise capacity is unresolved. It seems that the trend is for a decline or unchanged status in exercise capacity after a course of chemotherapy (16, 45, 47). These consequences might be because of the difference of study design and the outcome measurements. In addition, many studies showed that chemotherapy related to many adverse symptoms, especially fatigue and dyspnea, and these symptoms related to anemia and related to limit of physical function of patients (32, 34, 48-50). These might cause of decline of cardiorespiratory fitness after patients received chemotherapy. In part of QoL, many studies showed patients those who finished chemotherapy treatment can increase of QoL by relieving of many symptoms (18-20), especially if compared with base supportive care alone (21), however, the study of

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Mohan et al. showed that even though chemotherapy can relieve of many symptoms but it cannot determine that QoL will be improve as well (16). Therefore, we expected that the QoL of patients after received chemotherapy will be decline as same as cardiorespiratory fitness. Moreover, the comparison of cardiorespiratory fitness and QoL at difference courses of chemotherapy is still a lack of research evidence.

Therefore, the purposes of this study was to study the effects of chemotherapy on cardiorespiratory fitness and QoL at three difference time series in the course of chemotherapy in newly diagnosed patients with advanced stage of SCLC or NSCLC. The results of this study would provide the evidence on the effects of chemotherapy treatment and disease progression on these outcomes. Finally, information derived from this study might help physical therapists and other health professionals to be ready to deal with the problems that might occur as a consequence of chemotherapy and disease progression.

2. Purposes of the study and hypothesis

Purposes:

To compare the effects of chemotherapy before the first course of chemotherapy, after the second and after the fourth courses of chemotherapy on cardiorespiratory fitness and QoL in newly diagnosed patients with advanced stage of SCLC and NSCLC.

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Hypotheses:

1. The effect of chemotherapy on cardiorespiratory fitness (PFTs and 6MWT) after receiving the fourth courses of chemotherapy would be greater decline than patients after receiving the second and before the first course of chemotherapy, respectively.

2. Overall, the majority of items of the QoL and symptoms of patients after receiving the fourth courses of chemotherapy would be greater decline than patients who receiving the second course and pre receiving first course of chemotherapy, respectively.

3. Advantages of the study

The results of this study would provide the evidence on the effect of chemotherapy treatment and disease progression on cardiorespiratory fitness and QoL. Hopefully the information is derived from this study might help physical therapists and other health professions to be ready to deal with the problems that might occur as a consequence of chemotherapy and disease progression, including determining treatments plan for this patient group.

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