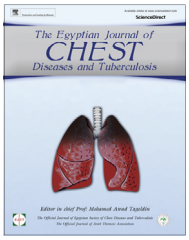
Egyptian Journal of Chest Diseases and Tuberculosis (2014) **63**, 423–434

The Egyptian Society of Chest Diseases and Tuberculosis

Egyptian Journal of Chest Diseases and Tuberculosis

www.elsevier.com/locate/ejcdt
www.sciencedirect.com



ORIGINAL ARTICLE

Comparative study of two radiotherapy regimens for palliation of symptomatic advanced non-small cell lung cancer

N.A. Eldeeb [a], **A.M. Bela** [a], **A.A. Eganady** [b,*], **A.S. Radwan** [a]

[a] *Clinical Oncology and Nuclear Medicine Department, Faculty of Medicine, Alexandria University, Egypt*
[b] *Chest Diseases Department, Faculty of Medicine, Alexandria University, Egypt*

Received 11 November 2013; accepted 11 December 2013
Available online 1 February 2014

KEYWORDS

None small cell lung cancer;
Radiotherapy;
Health related quality of life

Abstract *Introduction:* Lung cancer is the most commonly diagnosed cancer worldwide and causes approximately 1–2 million deaths per year. Non-small cell lung cancer (NSCLC) accounts for at least 80% of all lung cancer cases, presenting as locally advanced disease in approximately 25–30% of cases and as metastatic disease in approximately 40–50% of cases.

Aim of the work: To compare symptom control in patients with inoperable, locally advanced or metastatic NSCLC using two different regimens of palliative external beam radiotherapy (RT), and to determine toxicity profile, health related quality of life (HRQOL), tumor control, and overall survival.

Patients and methods: A prospective clinical study included 30 patients who were randomly assigned into two groups; group (A) 15 patients received RT regimen of 10 fractions of 3 Gy over 2 weeks to a total dose of 30 Gy, and group (B) 15 patients received RT regimen of two fractions of 8.5 Gy days 1 and 8 to a total dose of 17 Gy. All patients in the study were subjected to the following; pretreatment evaluation, RT, patient's assessment, HRQOL, tumor control, and overall survival.

Results: The hypo fractionated RT regimens used in this study proved to be equally effective as the more protracted regimen in terms of palliation of the intrathoracic symptoms, treatment tolerance, HRQOL, and overall survival. This may hopefully convince at least some radiation oncologists still using more protracted regimens to adopt this simple and efficient treatment.

* Corresponding author. Tel.: +20 01223926049.
E-mail address: a.ganady@hotmail.com (A.A. Eganady).
Peer review under responsibility of The Egyptian Society of Chest Diseases and Tuberculosis.

ELSEVIER Production and hosting by Elsevier

 http://dx.doi.org/10.1016/j.ejcdt.2013.12.006

Conclusion: Palliative RT plays an important role of palliation of symptomatic intra thoracic disease and in preservation of HRQOL in patients who have limited expected survival time and or intolerance to combined chemotherapy and radical RT regimens.

Introduction

Lung cancer is the most commonly diagnosed worldwide, and causes more deaths than any other cancer. In the year 2008, approximately 15% of new lung cancer in the United States will be diagnosed, with an estimated death rate of 31% in males and 26% in females [1]. In Egypt, however there is no population based cancer registry, but based on Gharbia cancer registry, lung cancer represents 5.1% of all incident cancers [2].

The treatment of NSCLC which represents 80% of all lung cancers is still a challenge for oncologists. In the past decade, combined-modalities treatment in stage III disease and chemotherapy for stage IV disease improved the survival and HRQOL. But unfortunately many patients are unfit to undergo these intensive treatments [3,4].

Consequently, a shorter course of hypo fractionated RT for palliation, if effective and unduly toxic, would be an attractive alternative to more protracted regimens, so clinical trial that is organized to ensure homogeneity in both patient characteristics and treatment interventions is needed. Shorter hypofractionated schedules require fewer trips to the RT facility for the patient, and in all likelihood, smaller directly and indirectly costs for society, especially for developing countries (like Egypt) with limited resources [4].

To measure the effect of palliative intervention, it is recommended to use patients' self-reported assessment using validated instruments but unfortunately, most reports regarding palliative fractionation in NSCLC have used clinical assessment of palliative effect only [5].

Aim of the work

Primary objective was to compare symptoms' control in patients with inoperable, locally advanced or metastatic NSCLC using two different regimens of palliative RT.

Secondary objective was to determine; toxicity profile, HRQOL, tumor control, and overall survival.

Patients

This was a prospective clinical study that included 30 patients, who were randomly assigned into one of two groups:

Group A: Consisted of 15 patients who received RT regimen of 10 fractions of 3 Gy over 2 weeks to a total dose of 30 Gy.

Group B: Consisted of 15 patients who received RT regimen of two fractions of 8.5 Gy days 1 and 8 to a total dose of 17 Gy.

Conditions for Patient Eligibility:

1. Cytological proven diagnosis of NSCLC.
2. Inoperable Stage III or IV disease.
3. Age $\geqslant$ 18 years.
4. Eastern Cooperative Oncology Group (ECOG) Performance Status (PS) $\geqslant$ 2 (Appendix I). [6]
5. Pulmonary symptoms attributable to the primary tumor.
6. Unfit for chemotherapy.
7. Patients with relapse in the chest after previous surgery.
8. Previous chemotherapy, but no earlier RT to the primary tumor.
9. No Prior invasive malignancy (except non-melanomatous skin cancer).
10. Signed study specific informed consent prior to study entry.

Methods

All patients in the study were subjected to the following:

Pretreatment evaluation

1. History taking and physical examination.
2. Current weight, height, and detection of the weight loss in the past six months.
3. Assessment of ECOG performance status [6].
4. Biopsy was performed by fiber optic bronchoscopy (FOB) or CT guided biopsy.
5. Staging workup including X-ray chest, CT chest, abdomen and pelvis.
6. Cerebral CT or MRI and bone scans were only performed when indicated.
7. Determination of tumor measurements.
8. Routine laboratory studies.
9. The patients were categorized according to the American Joint Committee on Cancer (AJCC) staging system [7]. Updated after the of the end of patients accrual.

Radiation therapy

RT was given with Mega-voltage linear accelerator with photon beams of $\geqslant$6 MV.

Immobilization, simulation, and localization

- Patient setup was achieved by the use of customized immobilization devices.
- The patient position was supine with the arms above the head.
- A treatment planning CT scan for defining target volumes.
- Contrast use improved the contouring of centrally located tumors.
- The treatment isocenter was located in the tumor mass.

Treatment planning/target volumes

1. Gross Tumor Volume (GTV): included the gross primary tumor and the adjacent pathologically enlarged lymph nodes.