Journal of the Egyptian National Cancer Institute xxx (2016) xxx–xxx

Contents lists available at ScienceDirect

Journal of the Egyptian National Cancer Institute

journal homepage: www.sciencedirect.com

Full Length Article

Patterns of care and survival among small cell lung cancer patients: Experience from a tertiary center in India

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ARTICLE INFO

Article history:
Received 8 April 2016
Received in revised form 7 October 2016
Accepted 8 October 2016
Available online xxxx

Keywords:
Small cell lung cancer
Patterns of care
Chemotherapy
Radiotherapy
Outcome

ABSTRACT

Background/purpose: Lung cancer is the commonest malignancy and the most common cause of cancer related mortality in males worldwide. Non-small cell lung cancer (NSCLC) is the commonest histology while small cell lung cancer (SCLC) contributes to only 15% of all cases of lung cancer. This report intended to present the patterns of care, survival outcomes and prognostic factors of SCLC treated in a tertiary care institute.

Results: A total of 85 patients of SCLC were registered in radiotherapy unit I during the period January, 2005 to December, 2012. The median age of the cohort was 56.5 years (95% CI 34–72). The majority of the patients were male with a male:female ratio of 6.7:1. Sixty eight percent of the patients were smokers. Sixty percent patients presented with extensive stage disease. Radiotherapy (RT) was used in 76% of the patients while chemotherapy was used in 75% of the patients. Platinum Etoposide was the most common regimen which was used in 70% of the patients who received chemotherapy. The median progression free survival (PFS) of the entire cohort was 11.4 months (95% CI 9.11–13.58 months). Stage, performance status, and use of chemotherapy were found to be significant factors affecting survival outcome in patients with SCLC.

Conclusion: The pattern of care and survival outcomes in the present study parallels that of the various published retrospective reviews. Basic research and development of targeted agents may be the way forward in improving the outcome of patients with SCLC.

Introduction

Worldwide lung cancer is the most common malignancy and the commonest cause of mortality among male. Also, in India carcinoma lung has been reported to be the commonest malignancy from all Population Based Cancer Registries (PBCR). Eighty five percent of lung carcinoma has been classified as non-small cell lung cancer (NSCL) and remaining 15% as small cell lung carcinoma (SCLC) [1]. The prognosis in SCLC has remained dismal with a survival of about 24 months for limited stage and 12 months for extensive stage. It is well known that small cell lung cancer is a systemic disease and systemic chemotherapy is the back bone of the treatment [2]. After the introduction of Cisplatin and Etoposide chemotherapy and early integration of radiotherapy (local and prophylactic cranial), further steps to improve outcomes have not been successful [3,4]. Better knowledge of molecular pathology of these tumors may help in developing newer agents that may improve survival [5]. This retrospective review is intended to present the demographic features, patterns of care, survival outcome and pattern of recurrence in SCLC patients treated at a tertiary care center in north India.

Patients and methods

Medical records of lung cancer patients treated from 2005 to 2012 were retrieved. Patient and treatment related variables documented in the file were recorded on a structured proforma. These factors were age, sex, symptoms, symptom duration, Eastern cooperative oncology group (ECOG) performance status (PS), smoking, medical co-morbidities and stage, treatment intent, type and number of chemotherapy cycles, radiotherapy (RT) dose fractionation and toxicity to treatment.

Peer review under responsibility of The National Cancer Institute, Cairo University.

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http://dx.doi.org/10.1016/j.jnci.2016.10.001
1110-0362/

Please cite this article in press as: Julka PK et al. Patterns of care and survival among small cell lung cancer patients: Experience from a tertiary center in India. J Egyptian Nat Cancer Inst (2016), http://dx.doi.org/10.1016/j.jnci.2016.10.001

Pretreatment evaluation and treatment

All patients were evaluated with contrast enhanced computed tomography scan of the chest and abdomen, bone scan, contrast enhanced magnetic resonance imaging (MRI), serum LDH, complete blood count, liver and kidney function test and pulmonary function test. A positron emission tomography (PET) scan was advised only in selected cases with high disease burden for suspicion of metastasis. Patients were categorized in limited and extensive stage following Veterans Administration Lung Study Group (VALG). Treatment was done by multidisciplinary approach following departmental protocol. Patients with limited stage disease were treated with chemotherapy with Cisplatin and Etoposide for 1–2 cycles and then subjected to concurrent radiation with chemotherapy. Radiation was planned by conformal technique to a dose of 45 Gy in 25 fractions in 5 weeks followed by boost of 10 Gy in 5 fractions over 1 week. After completion of thoracic radiation the responders were treated with prophylactic cranial radiation 25 Gy in 10 fractions over 2 weeks. For the thoracic radiation the target volume included the post chemotherapy primary tumor with 1 cm isotropic expansion (pCTV) and pre chemotherapy nodal volume with 1 cm isotropic expansion (nCTV). The final planning target volume (PTV) was delineated by adding 1 cm isotropic expansion to the clinical target volume. Patients with extensive stage disease were treated with palliative chemotherapy with a platinum and Etoposide containing regimen for 4–6 cycles and prophylactic cranial radiation in responders. Thoracic radiation was used for patients with complete or near complete response in extra-thoracic metastasis. A dose of 30 Gy in 10 fractions over 2 weeks was used for consolidation in responders. Target volume was considered similar to patients with limited stage disease.

Follow up

After completion of treatment patients were followed up every three months in curative patients and every month for metastatic patients. The follow up included detailed physical examination and a chest X-ray. A PET-CT or CECT thorax and abdomen was advised every three to six months. PFT was done every six months or as indicated for post radiotherapy cases.

Toxicity evaluation and response

Weekly complete blood counts were done during chemo-radiotherapy and were repeated 3–5 days before each cycle of adjuvant chemotherapy. Patients were evaluated for toxicities using common terminology criteria for adverse events version 2.0.

Statistical analysis

All categorical variables were summarized by frequency (%) and quantitative variables were summarized by median and range. SPSS version 16.0 was used for all statistical analysis. Survival outcomes were calculated from the date of diagnosis. Progression free survival (PFS) was calculated from the date of diagnosis to the date of progression. Overall survival was calculated from the date of diagnosis to the date of death from any cause. Kaplan–Meier method was used for survival analysis. Univariate analysis (log rank test) was used to assess the impact of prognostic variables on survival. A p value of <0.05 was taken as significant.

Results

Patient characteristics

Data were retrieved for 593 cases of carcinoma lung registered from 2005 to 2012. Out of these, 85 patients were diagnosed to have small cell carcinoma lung, thus accounting for 14.4% of all lung cancer cases. The patient characteristics have been described in Table 1. Median age of the cohort was 56.5 years (95% CI 34–72). Sixteen patients (18.6%) were younger than 50 years. Five patients were younger than 40 years. Fifty eight patients (68%) were current smokers. Remaining patients were found nonsmokers. Majority of the patients in this cohort were male with a male:female ratio of 6.7:1. Patients were categorized in limited and extensive stage following Veterans Administration Lung Study Group (VALG). Thirty four patients (40%) had limited stage while 51 (60%) had extensive stage. In patients with extensive stage at presentation, liver was the most common site of metastasis seen in 21 (41.2%) of the patients followed by bone 14 (27.4%) and brain 12 (23.5%). Pleural effusion was found in 9 (17.6%) and non-regional lymph nodes in 10 (19.6%) of the patients. Spleen and skin metastases were found in 2% of the patients.

Treatment details

The treatment intent was curative in 27 patients (30%) while palliative in 44 patients (52%). The treatment characteristics have been summarized in Table 2. Patients with limited stage disease were treated with chemotherapy with Cisplatin and Etoposide for 1–2 cycles and then subjected to concurrent radiation with chemotherapy. Patients with extensive stage disease were treated with palliative chemotherapy with a Platinum and Etoposide containing regimen for 4–6 cycles and thoracic and prophylactic cranial radiation in responders. Thoracic radiation was used for patients with complete or near complete response in extra-thoracic metastasis. Radiotherapy was used in 65 patients (76%) while chemotherapy was used in 64 patients (75%). Platinum-Etoposide was the commonest regimen which was used on 45 patients (70% of the patients receiving chemotherapy in the first

Table 1
Summary of patient characteristics.

Patient characteristics		SCLC	
		n	%
Age	<39	5	5.9
	40–49	11	12.9
	50–59	38	44.7
	60–69	25	29.4
	>70	6	7.1
Gender	Male	74	87.1
	Female	11	12.9
Presenting symptom	Cough	54	63.5
	Chest pain	32	37.7
	Breathlessness	35	41.2
	Hemoptysis	23	27.1
Performance status	0–1	34	40
	2–3	44	51.8
	4	7	8.2
Smoking	Yes	58	68.2
	No	27	31.8
Median pack years		30	
Co-morbidity	Yes	20	23.5
	No	65	76.5
Stage	LS	34	40
	ES	51	60

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