Review

Assessment and Short Course Palliative Radiotherapy in Locally Advanced and Metastatic Disease of Carcinoma Lung Patients

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Abstract

Purpose

Purpose of this study is to assess carcinoma lung patients and short course palliative radiotherapy in locally advanced and metastatic disease.

Methods and Materials

106 cases of locally advanced and metastatic histologically proven lung cancer patients attending radiotherapy OPD in our department have been evaluated. Patients were assessed with stage, general condition, performance status and palliative radiotherapy treatment for local disease and metastatic disease.

Results

Out of 106 patients, 54 patients had locoregionally advanced disease. 30 Patients had bone metastasis. 21 Patients had brain metastasis. Palliative radiotherapy was given local to thoracic region for locoregionally advanced local disease, to metastatic bone lesion, whole brain radiotherapy was given for brain metastasis and palliative radiotherapy was given for soft tissue metastasis.

Conclusion

Most of the patients of Carcinoma lung presented with locally advanced disease or with metastatic at initial presentation. Survival in lung cancer patients is usually less with approximately 9 months to 1 year in locoregionally advanced and metastatic settings. Short course palliative radiotherapy is mainly given to relief symptoms from locally advanced disease and metastatic disease.

Key Words: Lung Cancer; Locally Advanced Disease; Metastasis; Palliative Radiotherapy

Introduction

Lung cancer is one of the commonest cancers and cause of cancer related deaths all over the world. It accounts for 13 per cent of all new cancer cases and 19 per cent of cancer related deaths worldwide. There were 1.8 million new lung cancer cases estimated to occur in 2012 [1]. In India, lung cancer constitutes 6.9 per cent of all new cancer cases and 9.3 per cent of all cancer related deaths in both sexes; it is the commonest cancer and cause of cancer related mortality in men. Age adjusted rate 28.3 and 28.7 per 100,000 populations in males and females, respectively [2].

Unfortunately, the diagnosis of lung cancer is often made late in the course of the disease, with almost 70% of patients presenting with locally advanced or metastatic disease at initial diagnosis.

The overall 5-year survival rate of lung cancer is dismal with approximately 15 per cent in developed countries and 5 per cent in developing countries. NSCLC accounts for approximately 85% of all cases of lung cancer [3,4].

Purpose of this study is to assess lung cancer patients coming to our center and for short course palliative Radiotherapy to locally advanced disease and to symptomatic metastatic lesion.

Methods and Materials

In this retrospective study, Between, January 18 to October 2018, 106 patients of histologically proven lung cancer ( Non-small cell lung cancer or Small cell lung cancer) were assessed coming to department of Radiation Oncology, GCRI for treatment of Radiotherapy.

We have not included patients for curative radiotherapy in this study.
Also, we have included patients with lung cancer having brain metastasis only of last 4 months.

Demographic characteristics have been shown in chart. (Table 1)

Patients coming for Radiotherapy to our centre have been referred from Medical or Surgical OPDs and they are assessed short course Palliative Radiotherapy to local site for locally advanced disease or to distant metastatic site according to department protocol.

All patients had histologically proven diagnosis of Non-small cell lung cancer (NSCLC) or Small cell lung cancer (SCLC), with reports of CT scan Thorax, CT scan abdomen-pelvis, Bone scan as in case of Bone metastasis, CT scan or MRI Brain in case of brain metastasis.

**Induction chemotherapy for Locoregionally advanced disease**

- Few of the patients had also received Induction chemotherapy in locoregionally advanced disease (Stage IIIA, IIIB). For Stage IIIA disease also, sometimes even after induction chemotherapy we offered short course palliative radiotherapy depends on ECOG performance status, response to induction chemotherapy.

**Patient’s assessment for Palliative Radiotherapy**

- Patients with Poor general condition and ECOG performance status and locoregionally advanced lung cancer were taken for Palliative Local radiotherapy. They were taken for Palliative Radiotherapy to relieve local symptoms and to control local disease. Some patients had received Induction chemotherapy and after completion of Palliative radiotherapy they referred back to Parent unit and called on after one month to check for response evaluation.

Local field was placed according to standard conventional guidelines for Upper, Middle or Lower lobe with inclusion of nodes. Field placement was AP-PA with prescription at midplane.

In patients whom Biopsy was not able to be taken due to SVC obstruction, Radiotherapy was given with consent with standard conventional fields.

Dose used for Local palliative radiotherapy was used as 30 Gy/10#, or 20 Gy/5# depends on local tumor burden, response.

- Patients with Bone metastasis, Spinal cord compression, Brain metastasis, Soft tissue metastasis due to proven primary lung cancer were taken for Palliative Radiotherapy to relieve symptoms.

Bone metastasis – field was taken 1 vertebra above and 1 vertebra below of involved vertebra. And prescription was given at depth according to CT scan findings. For pelvic bone lesions – treatment planning was done with involvement of target bone and AP-PA fields.

For Brain metastasis – treatment was given with bilateral fields to whole brain.

Dose for metastatic disease was used as 30 Gy/10# or 20 Gy/5# for Brain metastasis, 30 Gy/10#, 20 Gy/5#, Single # for Bone/ Soft tissue metastasis.

**Follow up**

**Table 1**: Demographic characteristics of patients

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>No. of Patients</th>
</tr>
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<tbody>
<tr>
<td><strong>AGE</strong></td>
<td></td>
</tr>
<tr>
<td>30-39</td>
<td>04</td>
</tr>
<tr>
<td>40-49</td>
<td>17</td>
</tr>
<tr>
<td>50-59</td>
<td>43</td>
</tr>
<tr>
<td>60-69</td>
<td>33</td>
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<tr>
<td>70-79</td>
<td>08</td>
</tr>
<tr>
<td>80-89</td>
<td>01</td>
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<tr>
<td><strong>SEX</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>100</td>
</tr>
<tr>
<td>Female</td>
<td>006</td>
</tr>
<tr>
<td><strong>BIOPSY</strong></td>
<td></td>
</tr>
<tr>
<td>SCC</td>
<td>39</td>
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<tr>
<td>Adenocarcinoma</td>
<td>45</td>
</tr>
<tr>
<td>Small cell lung ca</td>
<td>13</td>
</tr>
<tr>
<td>Sarcomatoid ca</td>
<td>01</td>
</tr>
<tr>
<td>Neuroendocrine ca</td>
<td>02</td>
</tr>
<tr>
<td>Bx not known</td>
<td>06</td>
</tr>
<tr>
<td><strong>RADIOTherAPy</strong></td>
<td></td>
</tr>
<tr>
<td>Locally advanced</td>
<td>54</td>
</tr>
<tr>
<td>Bone metastasis</td>
<td>30</td>
</tr>
<tr>
<td>Brain metastasis</td>
<td>21</td>
</tr>
<tr>
<td>Soft tissue metastasis</td>
<td>01</td>
</tr>
<tr>
<td><strong>DOSE</strong></td>
<td></td>
</tr>
<tr>
<td>Local thoracic region</td>
<td>30 Gy/10# or 20 Gy/5#</td>
</tr>
<tr>
<td>Bone metastasis</td>
<td>30 Gy/10# or 20 Gy/5# or single #</td>
</tr>
<tr>
<td>Brain metastasis</td>
<td>30 Gy/10# or 20 Gy/5#</td>
</tr>
<tr>
<td>Soft tissue metastasis</td>
<td>8 Gy single #</td>
</tr>
</tbody>
</table>
Patients were referred to parent unit after completion of Radiotherapy treatment and were called for follow up after one month for response assessment.

**Results**

Out of 106 patients, 100 patients were Male, and only 6 patients were Female.

Most of the patients are in the age group of 50-69 years.

In histology 39 patients had Squamous cell carcinoma, 45 patients had Adenocarcinoma. Which shows different trend towards adenocarcinoma? 54 patients had locoregionally advanced disease. 30 Patients had bone metastasis. 21 Patients had brain metastasis. Palliative radiotherapy was given local to thoracic region for locoregionally advanced local disease, to metastatic bone lesion, whole brain radiotherapy was given for brain metastasis and palliative radiotherapy was given for soft tissue metastasis.

For locoregionally advanced disease – after completion of treatment, 50% patients did not come for follow up. In rest 50% (27) patients, 20 patients had relief from local pain.

For patients with bone metastasis – Radiotherapy was given to symptomatic bone lesion. Out of 30 patients, only 40% patients came for follow up after one month and out of 40% [12], 10 patients had relief from bone pain.

For patients with brain metastasis – out of 21 patients – 4 patients did not come after starting Radiotherapy for further completion of treatment. Out of 17 patients, all patients completed treatment. But, most of the patients did not come for follow up after 1 month as they were handled by medical oncology department.

**Conclusion**

Most of the patients of Carcinoma lung presented with locally advanced disease or with metastatic at initial presentation. Survival in lung cancer patients is usually less with approximately 9 months to 1 year in locoregionally advanced and metastatic settings. Short course palliative radiotherapy is mainly given to relief symptoms from locally advanced disease and metastatic disease. We are now doing a major study for larger number of patients of lung cancer to assess palliative treatment.

**Discussion**

Patients requiring palliative thoracic RT present with symptoms that are caused by loco regional growth of tumor that may be safely and adequately encompassed by an RT field. Indications for thoracic EBRT include, but are not limited to: hemoptysis, cough, chest pain, dyspnea, and obstructive pneumonia, dysphagia related to esophageal compression, superior vena cava syndrome, hoarseness, or stridor.

The clinical trial evidence has demonstrated that higher dose radiation treatment fractionations (30-Gy/10-fraction equivalent or greater) are associated with improvements in total symptom score and survival (but at the cost of some increased side effects, such as radiation esophagitis), primarily in patients with good performance status. There have been 14 RCTs [5-18] published to date addressing the question of the optimal EBRT dose schedule to palliate symptomatic advanced lung cancer.

In our patients too, we had used palliative Local dose of 30 Gy/10# or 20 Gy/5#, depending on tumor load, patient general condition, ECOG status. Lung cancer is the third most common form of cancer to spread to bone. About 30–40% of patients with lung cancer developed bone metastases during the course of their disease; the median survival time of patients with this secondary lesion is 7 months [19].

In our patients too, out of 106 patients, 30 patients had bone metastasis. And we had given palliative radiotherapy to symptomatic bone lesions.

Metastatic brain tumors are the most common intracranial neoplasm in adults, the majority of brain metastases originate from lung cancer (40–50%) [21]. Patients with brain metastases have median survivals of 3–6 months [20]. Lung cancer patients develop brain metastases early, within the first 2 years, after primary tumor diagnosis. In SCLC, 10% of patients have central nervous system (CNS) metastases at time of primary tumor diagnosis [22]. Between 25% and 40% of NSCLC patients reportedly develop brain metastases during the course of their disease [23].

In our patients, 21 patients had brain metastasis, 4 patients lost to follow for further radiotherapy treatment after starting radiation. And out of 17 patients after completion of treatment all patients were handled by medical oncology department.

**References**


