Palliative thoracic radiotherapy dose, non-small cell lung cancer with oligometastases and prognosis

Sir,

The identification of extrathoracic spread to the viscera in people with non-small cell lung cancer (NSCLC) is generally

perceived as an indicator of a dismal outcome and usually indicates only palliative treatment. Recent publications have investigated different thoracic irradiation dose regimens for advanced cases (including stage IV disease) of lung cancer.[1-3] Where a cure is not possible, the aim of palliative treatment should be to keep the patient alive and well with minimal symptoms, out of the hospital and off treatment.[4] Hence, a shorter course of palliative thoracic radiotherapy (PTR) toward the end of the disease process seems rational for symptomatic individuals. The purpose of this study was to evaluate the impact on prognosis of different total doses of PTR used in NSCLC patients with stage IV oligometastatic disease (OMD).

The 36 individuals identified for this retrospective study shared a diagnosis of stage IV synchronous NSCLC and OMD and treatment for palliation of the thoracic tumor and brain metastasis between 1981 and 2000. They were grouped according to the employed PTR total dose: ≤30 Gy (26 patients) or >30 Gy (10 patients).

Management of OMD in the brain consisted of whole brain irradiation (35 people including the 9 individuals who underwent prior neurosurgical resection of solitary metastatic disease; mean total dose of 30 Gy ± 5.5 Gy; range 6–56 Gy) or Gamma knife radiosurgery alone (1 patient; 15 Gy marginal dose). Fractionated PTR included the mediastinum and the lung lesion with exclusion of the spinal cord when the total prescribed dose exceeded 40 Gy. The mean total dose was 32.5 Gy ± 5.7 Gy (range 6–56 Gy). None of the patients received chemotherapy because during the early eighties the efficacy of chemoradiation had not yet been fully ascertained. Tumor response to PTR was not evaluated because the majority [64% (23/36 patients)] had an early (within 6 months) demise.

Table 1 summarizes the clinical characteristics of the study subjects. The mean age was 57.8 ± 7.6 years (range 39–77 years). The overall 1-year survival rate of patients treated by PTR was 14% [95% confidence interval (CI) 3–25%], and the median survival was 5 months (95% CI 2–12 months). With respect to PTR applied dosage and prognosis, the 1-year survival rates for the 26 people treated with ≤30 Gy and the 10 individuals irradiated with >30 Gy were 12% (95% CI 0–24%) and 20% (95% CI 7–33%), respectively; the corresponding median survivals were 5 months (95% CI 2–7 months) and 4.5 months (95% CI 3–12 months) with $P = 0.48$.

Table 1: Clinical characteristics in isolated M_1 NSCLC

Feature	Palliative thoracic radiotherapy dose		*P* value
	≤30 Gy (*n* = 26)	>30 Gy (*n* = 10)	
Age group			0.10
Non-elderly	21	5	
Elderly*	5	5	
Gender			0.65
Male	20	9	
Female	6	1	
Symptoms†			0.99
Absent	19	7	
Present	7	3	
Other illness‡			0.18
Absent	22	6	
Present	4	4	
T stage§			0.13
T1-2	15	9	
T3–4	11	1	
N stage§			0.44
N0–1	13	8	
N2–3	13	2	
Histology			0.99
SCC	9	4	
ADC	8	5	
Other	9	1	
NSCLC site			0.71
ULB	14	4	
MLB	2	1	
LLB	5	2	
MSB	5	2	
Other	-	1	
Performance status**			0.30
0–2	24	8	
3	2	2	

*Elderly: 65 years of age and older, †Chest/neck/shoulder/arm pain; dyspnea, ‡Hypertension, coronary artery disease, chronic obstructive pulmonary disease, §American Joint Committee on Cancer staging system, **Southwest Oncology Group scoring system, SCC: Squamous cell carcinoma; ADC: Adenocarcinoma; other: Large cell or poorly differentiated carcinoma; ULB: Upper lobe bronchus; MLB: Middle lobe bronchus; LLB: Lower lobe bronchus; MSB: Main-stem bronchus; other: Mediastinum, NSCLC: Non-small cell lung cancer

The management of NSCLC in cases of stage IV disease is important because significant mortality rates continue to be reported in the literature. In 2010, there were 222,520 new cases of lung cancer in the United States and 157,300 deaths attributed to this malady.[5] PTR has a definite role in the palliation of symptomatic individuals with stage IV NSCLC.[6] Controversy exists with respect to the appropriate total dose of PTR because of conflicting results concerning symptom palliation and survival in randomized controlled trials.[7] Several institutional experiences have reported prolonged survival of some individuals with stage IV oligometastatic NSCLCs in which the lung neoplasms were treated aggressively with higher doses (median dose >50 Gy) of PTR.[8,9] Nonetheless, we believe that the decision to apply a shorter irradiation course or a higher dose scheme could very likely be influenced by several factors (i.e., the patient's performance status, nature of stage IV neoplastic spread, presence or absence of co-morbid conditions and, perhaps, the central location of the thoracic neoplasm). The inherent constraints of our retrospective study notwithstanding, in conclusion, we observed that people with stage IV disease treated with a lower dose schedule for palliation of NSCLC do not have a worse survival compared to those individuals managed by a longer course of PTR. Continued studies are needed to ascertain the optimum PTR dose schedule in select patients with oligometastatic stage IV NSCLC.

Federico L. Ampil, Gloria Caldito[1]
Departments of Radiology and [1]Biometry, Louisiana State University Health Sciences Center, Shreveport, Louisiana, USA
E-mail: fampil@lsuhsc.edu

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