ONCODAILY MEDICAL JOURNAL

abstract

Radiation-induced Lung Toxicity: A Crucial Problem in Thoracic Radiotherapy

Nindra Armugam

DOI: 10.69690/ODMJ-018-3101-6652

AMSTRO
Asia and Middle East Society of Therapeutic Radiation and Oncology
Affiliated with ASTF

abstract

Radiation-induced Lung Toxicity: A Crucial Problem in Thoracic Radiotherapy

Authors: Nindra Armugam

Affiliation: Department Of Radiation Oncology, Care Hospital, Gachibowli

DOI: 10.69690/ODMJ-018-3101-6652

Introduction: Despite technical developments in treatment delivery, radiation-induced lung toxicity remains a crucial problem in thoracic radiotherapy. As patients with lung cancer present with compromised lung function, the reproducibility of FEV1 and FVC helps to ensure that pulmonary function tests are important predictors of patients' ability to undergo surgical resection and radical radiotherapy. Hence, we evaluate the changes in pulmonary function with concurrent chemoradiation.

Methodology: This is a prospective study conducted at MNJIO and RCC to evaluate the changes in pulmonary functions in a total of 60 patients who had received 60 Gray (GY) radiotherapy and chemotherapy for primary NSCLC who had undergone pulmonary function tests (PFTs) before and within one year after treatment. Before every cycle of chemotherapy, pulmonary function tests were done. Postradiation PFT values (percentage of predicted) were evaluated amongst individual patients compared to the same patient's preradiation value at the following time intervals of 0 to 4 months, 5 to 8 months, and 9 to 12 months.

Results: Lung diffusing capacity for carbon monoxide (DLCO) is reduced in the majority of patients across the 3 time periods after radiation, whereas the forced expiratory volume in 1 second per unit of vital capacity (FEV1/VC) showed an increase and decrease after radiation in a similar percentage of patients. There were baseline differences (stage, RT dose, concurrent chemotherapy) among the radiation technology groups. On multivariate analysis, the following features were associated with larger post treatment declines in DLCO: pretreatment DLCO, gross tumor volume (GTV). Only pretreatment DLCO was associated with larger posttreatment declines in FEV1/VC.

Coclusion: Lung diffusing capacity for carbon monoxide is reduced in the majority of patients after chemoradiation, including gross tumour volume and pre-irradiation lung function, all of which could be used to estimate the impact of radiation therapy on an individual's respiratory status, possibly in the setting

of objective models that could aid in counselling patients before treatment.

Conflict of interests: The authors declare no conflict of interests.

Funding: This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.