

## **ABSTRACT**

### **PATIENT AND TREATMENT RELATED FACTORS RESPONSIBLE FOR RADIATION PNEUMONITIS IN POSTMASTECTOMY RADIATION AND THE IMPACT OF SUPRACLAVICULAR RADIATION**

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#### **Aim:**

To Study the incidence of symptomatic and radiological pneumonitis in patients receiving post mastectomy loco regional radiation.

#### **Materials and Methods:**

Retrospective analysis of 152 patients treated with adjuvant post-mastectomy radiation from January 2015 to August 2016 was done. All patients received loco-regional radiation using single iso-centric photon three-dimensional conformal radiation to a total dose of 4680cGy. Two plans with and without addition of supraclavicular (SCL) region were also generated for 30 patients and Dose volume histogram (DVH) parameters including lung volume and Mean Lung Dose (MLD) for all patients were analysed. Chest radiographs done prior and one year after completion of radiation were reviewed for radiation pneumonitis and scored as per Modified WHO Grading System for Radiographic Pulmonary Toxicity (RPT). Other patient related parameters like age, side of treatment, comorbid illness, chemotherapy and hormonal therapy details were noted.

## **Results:**

At a median follow up of 21 months, none had symptomatic pneumonitis. At 1 year of completion of radiation 26 patients developed RPT (17.1%). The average MLD with and without SCL is 14.9Gy and 13.5Gy respectively. 24 developed RP in tangential field territory and 2 developed in SCL territory. Increased age was significantly associated with development ( $P<0.001$ ) and severity ( $P=0.083$ ) of RPT. Patients irradiated on Right side were less associated with RPT ( $p=0.037$ ), RPT was more commonly associated with patients exposed to Tobacco/passive smoking ( $p<0.001$ ) and bronchial asthma ( $p=0.012$ ). With a lung constraint of  $V20<30\%$  and  $MLD < 15$  Gy none of the DVH parameters was associated with development of RPT. CMF chemotherapy ( $p=0.06$ ) and Aromatase inhibitors-Letrozole ( $p=0.05$ ) were associated with increased development of RPT which may be due to the elderly group of patients receiving these therapies.

## **Conclusion:**

There was no symptomatic pneumonitis and incidence of Radiation Pulmonary toxicity was only 17.1%. It was observed that  $age>50$  years was a significant factor for development of RPT. Other factors like bronchial asthma, exposure to passive smoking and irradiation of left side are also associated with development of RPT. Addition of regional radiation did not increase RPT. Prospective studies are required as consensus guidelines regarding factors responsible for radiation pneumonitis are not available.

## **Key words:**

Breast cancer, Post mastectomy Locoregional radiotherapy, Radiation pneumonitis.