ABSTRACT

Study Title: **Level of anxiety in breast cancer patients receiving locoregional radiation therapy and its correlation with inter-fraction variations observed during delivery of treatment**

INTRODUCTION: Breast cancer is the most frequent cancer among women according to the GLOBOCON 2012 report contributing to 27% of all new cancers in women in India. Radiation therapy forms an integral part of its multi-modality treatment. Various studies have found a significant level of anxiety among patients undergoing radiation therapy due to fear of unknown. During delivery of radiation therapy for breast cancer patients, other than setup uncertainties, target motion due to breathing is also significant. High anxiety levels may lead to significant change in breathing pattern which could result in larger setup variations observed during the treatment.

AIMS AND OBJECTIVES: Our study aimed to estimate the level of anxiety in non metastatic breast cancer patients undergoing radiation therapy. It also aimed to measure the inter fraction variations and to determine any correlation between the observed anxiety levels and inter fraction variations recorded during the treatment. Thus, trying to determine the need of counseling for anxious patients to reduce these errors.

METHODS AND MATERIALS: The anxiety levels were measured using the Beck Anxiety Inventory (BAI) questionnaire which contains 21 items. It was administered at the time of simulation, first three days of treatment and weekly once during the course of
treatment. The inter-fraction variation was measured using the electronic portal images for the same days and correlation was calculated using Pearson correlation coefficient.

RESULTS: Twenty seven patients who received chest wall or whole breast irradiation with or without nodal irradiation using field in field technique were assessed. The anxiety levels were found to be high at the time of simulation and on the first day of treatment (median anxiety score was 7), it then declined rapidly over the subsequent days (median score was 4 and 3 respectively on second and third day of treatment). The mean systemic error observed for vertical, lateral and longitudinal direction was 3.4, 3.4 and 3 mm and random error for all parameters was within 5 mm. The group systematic error for central lung distance (CLD) was 3.1 mm with a standard deviation of 1.8 mm. The CLD variation compared to baseline was found to be more on the first day of treatment and was significantly correlated ($r=0.45$, $p=0.02$) with higher level of anxiety seen at starting of treatment.

CONCLUSION : Patients have high anxiety levels during planning and starting of treatment. This affects the breathing pattern and therefore the treatment delivery in breast cancer patients especially on the first day of treatment. For optimal treatment and care of patients, an effort to understand the patients' anxiety and addressing it by better communication about radiation therapy procedure and likely side effects should be undertaken by the oncology team.

**Keywords** : Anxiety, Inter fraction variation, Breathing pattern