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Fall 10-1-2020

Correlations between the radiation dose to cochlear and sensorineural hearing loss in head and neck cancer

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Correlations between the radiation dose to cochlear and sensorineural hearing loss in head and neck cancer

INTRODUCTION: Intensity modulated radiotherapy(IMRT) is an advanced form of three dimensional conformal radiotherapy using computer optimised inverse treatment planning and a computer controlled multileaf collimator which safely deliver precise radiation dose to tumour while minimising dose to surrounding tissue. IMRT is usually used in head and neck cancers where many radiosensitive critical organs such as spinal cord, brain stem and parotid gland are in close proximity to the targets. Sensorineural hearing loss is a common side effect of radiotherapy in patients with head and neck cancer. The basal turn of cochlea which is responsible for high frequency hearing sounds is more susceptible for radiation than apical turn ,which explains radiation causing hearing loss at higher frequency.Sensorineural hearing loss as a result of Radiotherapy to inner ear and cochlea is a radiation dose limiting toxicity .Incidence of hearing loss can be minimised by maintaining the optimal cochlear radiation dose. Hearing tests prior and after radiotherapy enable in understanding dose response in order to assess the risk and severity of hearing loss. Aim:To determine the effect of cochlear dose on sensorineural hearing loss in patients with head and neck cancer treated by radiotherapy. Objectives:To evaluate hearing loss in patients receiving radiotherapy only and chemoradiation for head and neck malignancies using pure tone audiometry.

To evaluate hearing loss in patients receiving radiotherapy only and chemoradiation for head and neck malignancies using DPAOE and tympanogram.

To compare hearing loss in patients receiving only radiotherapy and concurrent chemoradiation.

To detect whether hearing loss is low frequency or high frequency.

To compare sensorineural hearing loss in patients receiving unilateral and bilateral neck irradiation.

STUDY DESIGN :A Longitudinal Descriptive study

STUDY POPULATION: Patients receiving radiotherapy and chemoradiation for head and neck cancer