Neck Spasms as a Late Effect of Intensity Modulated Radiation Therapy (IMRT) for Head and Neck Cancer

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\textbf{Purpose/Objective(s):} Muscle dystonia is not a well described late complication following the successful treatment of head and neck cancer (HNC) when IMRT is a component of treatment. We report on a series of patients who experienced this complication after completing definitive course IMRT.

\textbf{Materials/Methods:} 14 patients have complained of increasingly severe cramping in the neck in our follow-up clinics. As a control group an additional 14 patients were pulled from our head and neck database, matching age, stage, disease site and therapeutic intervention. A retrospective review of the treatment parameters of each group was conducted in an effort to better understand the causative factors of this complication.

\textbf{Results:} The cohorts were fairly balanced with 5 stage III patients and 9 stage IV patients; 13 males and 1 female; and median age 49 vs 52 years of age. Primary disease sites were base of tongue, tonsil, nasopharynx, thyroid, oral tongue, and unknown primary cancer. The staging in the neck was balanced with 4 N1 necks, 9 N2 necks, and 1 N3 neck in the affected group. In the unaffected group there were 5 N1 necks, 8 N2, and one patient with N3 disease. All patients were treated using modern IMRT techniques with a median dose of 6996cGy in both cohorts. In the group with neck spasms 9 patients were treated definitively with radiation therapy and 5 were treated postoperatively. In the control group 10 patients were treated definitively, and 4 postoperatively. Chemotherapy was delivered concomitantly to 11 patients in each group. Of the 9 treated definitively in the cohort with dystonia; 6 had minimal neck surgery for diagnostic purposes with an excisional biopsy rather than fine needle aspiration. Two patients treated definitively in the unaffected group had an excisional node biopsy. The median time to complaint of neck spasms from the start of treatment was 34.5 months (range 9.2 - 69 months). 3 patients with complaints of increasingly severe spasms have been evaluated by the department of physical medicine and rehab and helped with Botox injections.

\textbf{Conclusions:} This is the largest reported series of severe neck cramps as a complication after definitive IMRT +/- chemotherapy in patients treated for HNC. Botox injections seem to help these patients. Surgical intervention to the neck may increase the risk of developing cervical dystonia following IMRT for HNC although the numbers are small to make a definitive conclusion. Our preliminary experience suggests that contouring the cervical muscles as avoidance structures may minimize this risk, though further follow up of this cohort is needed to better characterize this rare event in HNC patients treated with IMRT.

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