Risk factors of acute toxicities in head and neck patients treated with VMAT

Volumetric modulated arc therapy (VMAT) is a radiotherapy (RT) technique whose main indications includes the treatment of head and neck neoplasms, due to its efficiency in preserving the organs at risk adjacent to the tumor area, and reducing acute and long-term toxicities inherent to radiotherapy in this region. Most common toxicities in patients undergoing radiotherapy in the head and neck region are oral mucositis (OM), taste alterations, xerostomia, dysphagia, pain and nutrition disturbances. The aim of this study was to determine the risk factors for the occurrence of oral toxicities during the VMAT. A retrospective study was carried out on the medical records of patients undergoing VMAT (n=95) for the treatment of neoplasms in the head and neck region, treated at Hospital Israelita Albert Einstein. Before and during RT, all patients were evaluated daily by the oral medicine team, whose applied a specialized oral care protocol including photobiomodulation and mouth rinse with enzymatic mouthwash. Results: The median onset of OM, taste alterations, xerostomia, dysphagia, pain, and nutrition disturbances was at accumulated dose of 19Gy, 20Gy, 20Gy, 26.4Gy, 20Gy, 22Gy, respectively. In multivariate analysis, maximum oral mucosal dose ≥65Gy (OR=5.030, p=0.049) and concurrent chemoradiotherapy (OR=7.560, p=0.010) were predictive factors for severe OM (grade ≥3 ou >3). Mean dose in the right parotid ≥25Gy was a predictive factor for xerostomia (OR=10.000, p=0.044). Mean dose in oral mucosa ≥35Gy (OR=12.800, p=0.021), xerostomia (OR=12.400, p<0.001), and tumor location in the parotid gland (OR=0.134, p=0.005) were significant predictive factors for taste alterations. Grade ≥3 OM (OR=18.000) and taste alteration (OR=7.000) were predictive factors for changes in diet and nutrition. Daily and specialized oral care for preventing and treating the toxicity in the oral cavity should be adopted mainly from the 19Gy accumulated dose.

Key words: Oral mucositis, radiotherapy and oral toxicities.