

ABSTRACT

Radiotherapy using the Volumetric Modulated Arc Therapy (VMAT) technique is one of the treatment modalities for nasopharyngeal carcinoma (NPC). This study aims to evaluate the dose conformity between the planned radiation dose and the actual delivered dose in NPC patients through volumetric dose auditing based on the Gamma Index and Absolute Dose Difference. The study was conducted at Dr. Sardjito General Hospital, Yogyakarta, involving 15 NPC patients with stage IVA without metastasis, treated using a radiation protocol of 70 Gy in 33 fractions. Data analysis was performed using the Octavius 4D PTW system and VeriSoft 8.1 software to obtain the Gamma Index and Gamma Passing Rate (GPR). The results showed that all patient data met the criteria of Gamma Index ≤ 1 and Gamma Passing Rate $\geq 90\%$, indicating good agreement between the planned and measured doses. The absolute dose differences were also within the clinically acceptable tolerance limit of $\leq 3\%$ from patient dose, with the highest value being 0.03 Gy and the lowest 0.027 Gy. Therefore, dose planning quality assurance using this system is clinically acceptable for NPC cases and can serve as a reference to ensure the quality and safety of radiation therapy in patients.

Keywords : *Nasopharyngeal Carcinoma, VMAT, Volumetric Dose Audit, Gamma Index, Gamma Passing Rate*