

**Purpose:**To compare the dosimetric differences between intensity-modulated arc therapy (ARC) and intensity-modulated radiotherapy (IMRT) plans for nasopharyngeal carcinoma simultaneously integrated boost (SIB) radiation therapy.

**Methods:**10 nasopharyngeal carcinoma cases treated by SIB radiation therapy were selected. For each case, two treatment plans (ARC and IMRT) were generated using Varian Eclipse ver8.6 treatment planning system. Evaluate the dose parameters of targets, organs at risk (OAR), monitor units and treatment time, using dose-volume histogram (DVH).

**Results:**There were statistical differences ( $P<0.05$ ) between CI, but no statistical differences ( $P>0.05$ ) between HI for PTV, PTV1, PTV2. Mean dose of brain-stem decreased in ARC plan, while the maximum dose increased. The maximum dose of spinal-cord in ARC plan were higher than those in IMRT plan, but not statistically significant. There were statistical differences between V15, V20, V25, V30, V35, V40, V45, and V50 of normal tissues. The number of MU resulted to be MU-IMRT=1308±213, MU-ARC=606±96. The MU of ARC plan were 702 less on average than IMRT plan.

**Conclusions:**The ARC was equal to IMRT on the target coverage and the dose of OAR, and better on CI. The ARC plan could reduce dose of normal tissues, machine monitor units and treatment time.