

Purpose:To investigate the commissioning of DLG correction factor for Mobius3D before clinical use for Halcyon.

Methods:(1) 20 IMRT/VMAT plans designed in heterogeneous phantom were selected and exported to Mobius3D, and the passing rate of 3D Gamma was recorded through the calculation of the built-in model.(2) 20 cases of IMRT/VMAT in the water phantom were selected to observe the coverage deviation of the target area and verify whether it was consistent with the debugging hint of the above DLG correction factor.(3) Adjust the DLG correction factor repeatedly, and verify the target coverage deviation of 20 IMRT/VMAT plans in water phantom, the target coverage deviation of 20 IMRT/VMAT plans in heterogeneous phantom and the passing rate of 3D Gamma.

Results:(1) The passing rate of the 3mm/3% Gamma of the 20 IMRT/VMAT plans designed in heterogeneous phantom was $90.23\% \pm 2.15\%$, and the target coverage values were all negative, indicating that DLG correction factor may need to be adjusted.(2) 20 cases of IMRT/VMAT in the water phantom were selected to observe the coverage value of the target area, which was also negative, consistent with the debugging hint of the DLG correction factor mentioned above.(3) After repeated debugging, the DLG correction factor was determined to be 0.8mm, and the target coverage deviation of 20 IMRT/VMAT plans in water phantom was verified to be $0.18\% \pm 0.03\%$, $0.05\% \pm 0.58\%$ for 20 IMRT/VMAT plans in heterogeneous phantom, and $97.28\% \pm 1.05\%$ for 3mm/3% Gamma.

Conclusion:The DLG of the accelerator has been considered in the dose algorithm of Mobius3D, but the specificity of the machine has not been considered. Therefore, the concept of DLG correction factor is proposed, and users can verify it according to the treatment planning system calculation results and measurement. The test case should have high modulation intensity, so the result can better serve the clinic.