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abstract

Locoregional Control in Patients with Nephroblastoma after Flank Irradiation: CRT vs VMAT

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Locoregional Control in Patients with Nephroblastoma after Flank Irradiation: CRT vs VMAT

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Introduction: Nephroblastoma (Wilms tumor, WT) is one of the most common malignant embryonal pediatric tumors. 20-25% patients with nephroblastoma receive radiation therapy (RT) for the flank area as part of local control. For many years, the use of the CRT technique for irradiation of the preoperative tumor volume has been the standard for flank RT. When using this technique, a large amount of healthy tissue was included in the irradiation volume. However, the use of a highly conformal flank combined with IMRT/VMAT techniques can not only reduce toxicity, but also not increase the risk of locoregional recurrences. We presented data from patients with WT who received RT in our center.

Methodology: From June 2012 to December 2023, 138 patients with WT received RT. 77 patients of 138 received RT in flank volume. A total of 32/77 patients received conventional flank RT and 45/77 received highly conformal flank irradiation using IMRT/VMAT. Doses were prescribed according to SIOP-RTSG-2001 and SIOP-RTSG-UMBRELLA-2016.

Results: The median follow-up was 13.3 months. One patient showed progression during RT and was excluded from the analysis. 11/76 were diagnosed with relapse. The median time to relapse was 11.6 months. 9 of 11 relapses were metastatic and 2 were locoregional. CRT – 1/31, VMAT – 1/45. In the patient receiving CRT, the relapse was localized in an area that would have been included in the Planning Target Volume (PTV) using the VMAT. Another relapse occurred in the patient who received a highly conformal flank. The relapse was in the region of the hepatic hilum and was included in the PTV.

Conclusion: Reducing flank target volumes did not increase the number of locoregional recurrences. Our analysis showed that the use of a highly conformal flank target volume with VMAT could provide good locoregional control in patients with WT.