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abstract

Analyzing Patterns of Treatment Gaps and Its Causes to Improve Integrated Care in Pediatric Cancer Patients Undergoing Radiation Therapy at a Tertiary Care University Hospital

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Analyzing Patterns of Treatment Gaps and Its Causes to Improve Integrated Care in Pediatric Cancer Patients Undergoing Radiation Therapy at a Tertiary Care University Hospital

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Introduction: Objective is to analyze the pattern of treatment gaps and its causes in pediatric cancer patients during radiation therapy (RT) to improve collaborative treatment and streamline the service at a tertiary care university hospital.

Methodology: The hospital database was retrospectively reviewed from January 2022-December 2024 and data was collected for patients <18 years, undergoing RT with or without general anesthesia (GA). Demographic and treatment details were collected along with duration of gap and its underlying cause.

Results: Approximately 177 patients were treated with RT. Mean age was 8.5±4 years with mostly males (n=112,63%). The common diagnoses were Rhabdomyosarcoma-RMS (n=36,20%), Ewing Sarcoma-ES (n=35,19.77%), Hodgkins Lymphoma-HL (n=30,17%) and Wilms Tumor-WT (n=26,15%). Relapsed/Refractory HL accounted for (n=12,6.78%). CNS tumors included Medulloblastoma (n=3,2%), Germ Cell Tumor-GCT (n=2,1%) and High-Grade Glioma-HGG (n=1,0.56%). Forty-five patients (25%) were treated under GA. Most of the patients were treated with Volumetric Modulated Arc Therapy/VMAT (n=115,65%). Seventy-nine (45%) patients had no gap during treatment. However, a minimum of 1 day gap (n=23,13%) and a maximum of 18-day gap was observed (n=1,0.5%). The mean gap was 3±4 days.

Gap was categorized as 1-2 days (n=35,20%), 3-7 days (n=41,23%) and >8 days (n=21,12%). The delay reasons were need for admission and optimization (n=54,31%), suspicion of disease progression and need for plan re-evaluation (n=2,1.12%), prolonged chemotherapy at primary center (n=2,1.12%) and welfare issues (n=1,0.5%). The most common reason for admission was neutropenic fever (n=16,9%) followed by chest congestion and transfusion because of decreased cell count, equally (n=2,1.1%).

Conclusion: Our study shows that almost half of the patients experienced no interruptions, gaps were observed in 55% of cases, with admission due to neutropenic fever being the most common cause. Addressing modifiable factors such as improved pre-treatment optimization and enhancing coordination with referring centers can further streamline RT services and improve outcomes for the patients.