

Dr. T. B. Patel Oration Award 2022

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Pediatric Radiation Oncology: The Evolving Landscape

Pediatric malignancies account for less than 3% of all malignancies. Although they comprise a relatively small proportion of the total global cancer burden, the implications of treatment and its consequences has far greater significance that are much beyond what the absolute numbers would reflect. It is predicted that in the United States approximately 1 in 285 children will be diagnosed with cancer before the age of 20. India documents approximately 50 thousand new cancers in the pediatric age group every year. This is expected to increase significantly in the near future and majority of the childhood cancers would be from developing countries.

The outcomes of cancer therapy in children has improved significantly over the years. In the developed nations the overall long term cures for childhood cancers in the mid and late 60's was approximately 50%, which has now improved to 75-80%. Unfortunately, in developing countries with resource constraints, poor access to healthcare and lack of appropriate infrastructure, the long term cures still range between 30-40%. The improvement in outcomes of cancer therapy in children could be attributed to multiple factors including better understanding about the natural history of cancers, improvements in diagnostic tools for more accurate diagnosis and prognostication, better treatment in terms of more efficacious chemotherapeutic agents with lesser toxicities, improvement in surgical techniques and the significant advancements in the optimal delivery of radiation therapy in the management of childhood cancers. Long term adverse effects of cancer therapy can result in significant long term physical and psychosocial impact on the

survivors of childhood cancers. Although long term adverse effects of radiation therapy have always been an area of significant concern amongst treating physicians and groups, technological advances in delivery of External Beam Radiation Therapy (EBRT) and Brachytherapy have resulted in significant improvements in outcomes in terms of disease control and reduction in adverse effects of treatment. Hence, radiation therapy still remains a mainstay in the combined modality management of pediatric malignancies.

Besides technical and technological advances, it is also essential that pediatric malignancies are treated in specialized comprehensive cancer centers with infrastructure and expertise in management of pediatric malignancies. The complexity of treatments and the need for combined modality approach makes it mandatory that treatment related decisions are made in multidisciplinary joint clinics comprising specialists from all treating specialities in order to achieve the best outcomes. Training in pediatric radiation oncology is also essential to ensure optimal delivery of radiation therapy.

Supportive care in the form of nutritional, financial, and psychosocial support goes a long way in preventing treatment abandonment and successful treatment completion of planned treatment protocols. Specialized pediatric palliative care clinics are extremely useful in maintaining good quality of life for children who develop incurable disease. Establishment of survivorship clinics is essential in order to address the special needs of cancer survivors and help successfully rehabilitate the cured young adults as productive members of our society.