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EDITORIAL

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Advances and challenges in pediatric cancers

While risk factors for gene mutations responsible for several adult cancers have been identified, they remain largely unknown in childhood malignancies. Fortunately, relative to adult cancers, pediatric cancers are uncommon. Leukemia, central nervous system (CNS) tumors, lymphoma, Wilms' tumor, and retinoblastoma make up the majority of cancers in children.[1] Clinical challenges in pediatric cancers include late diagnosis, varied immune responses, growing bodies, requirement to preserve future fertility, minimizing late effects, and the need to think beyond the standard 5-year survival.

Though the clinical outcomes have been steadily improving, the psychosocial and financial impacts continue to be significant and studied in terms of disability and quality adjusted life years (DALYs & QALYs).[1-4] A multi-modality, multi-speciality approach is required to minimize the impact on the education, employability, and psyche of the young survivors. This is reflected in a subset of articles in the current issue. In this special issue, we invited an international group of experts from research, nursing, and clinical practices to present some of the most recent advances in basic and clinical research, outcome, socio-economic impact, supportive care, and late effects (both mental and physical) of commoner types of childhood cancers.

Two review articles by **Martirosian et al**. and **Katiyar et al**. provide useful guidelines to clinicians managing medulloblastoma (MB), a type of CNS malignancy. **Martirosian et al**. summarize the diagnosis and current therapy for MB, results of 14 clinical trials (as of July 2018), challenges researchers face in studying this disease, existing knowledge gaps, and available tools and resources to advance the field. **Katiyar et al**. systematically review prospective studies that evaluated impact of EOR (extent of resection) on prognosis of MB and identify the need to standardize surgical protocols based on the current understanding and molecular subtypes of the disease.

Retinoblastoma (RB) is the most frequent ocular malignancy in children with majority of the cases diagnosed under 2 years of age. The cure rate of RB is 95% if diagnosed early and the disease is contained within the eye. However, these promising results are limited to the developed world. In their clinical study, **Gupta and colleagues** highlight the factors responsible for the poor prognosis of RB in developing countries and report the outcome of RB patients treated with neo-adjuvant chemotherapy at a tertiary-care hospital in India.

Ewing sarcoma (ES) is a rare type of cancer originating in the bones or soft tissues that is more common in teenagers and adolescents; 90% of these tumors express a fusion protein called EWS-FLI1 which is the primary oncogenic driver, yet its clinical use as a therapeutic target is challenging. In an original study, **Tomino et al**. show the potential of AURKA and BRD4 as candidates for combinatorial targeted therapy for ES.

Tumor-derived cell lines continue to be important preclinical models for cancer research and are widely used for investigating the underlying mechanisms of tumor biology as well as for high-throughput drug screenings. Accurate classification and authentication of cell lines is therefore a quintessential step for research integrity. In their original article, **Stroup and colleagues** discover that WT-CLS1, originally described as a Wilms' tumor cell line, demonstrates the classic histological, mutational, and transcriptional hallmarks of rhabdoid tumor, including *SMARCB1* loss which warrants its reclassification.

It is not difficult to understand that cancer affects much more than just the physical body. An interesting article, **"Tell it as it is,"** addresses the usually neglected thoughts and experiences of children battling the disease. In this cover article, **Tsimicalis and colleagues** describe how the use of Sisom, an interactive computerized communication tool, can enable children to effectively share their thoughts, fears, and needs with parents and provide clinically useful information to the doctors.

Advances in modern medicine has led to an increase in the number of adolescent cancer survivors. Understanding the psychological changes that accompany the physical growth in these survivors is now more important than ever to facilitate their rehabilitation and positive life experience. In a systematic review, **Kosir and colleagues** summarize prevalence rates and predictors of PTSD, anxiety, and depression in young cancer survivors and discuss areas for targeted interventions. In another article, **Soejima et al**. evaluate the impact of childhood cancer and late physical effects on employment and associated worries among the adult survivors of childhood cancer.

The financial burden of cancer treatment is of significant concern to the families and is often catastrophic. In low- and middle-income countries, this may result in families abandoning their child's treatment. In the final article of this special issue, **Mardakis et al**. present a qualitative analysis of the direct, indirect, and psychosocial costs in children with cancer in India and provides avenues for health care professionals and institutions to develop interventions aimed at reducing the costs associated with cancer treatment.

Abbreviation: CNS, central nervous system; ES, Ewing sarcoma; MB, medulloblastoma; PTSD, posttraumatic stress disorder; RB, retinoblastoma

We hope the issue will interest the readers and provide useful insights for improving the diagnosis, management, and rehabilitation of children and families affected by cancer.

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