Evaluation and Treatment of Emergencies in Pediatric Hematology and Oncology

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Wherever the art of medicine is loved, there is also a love of humanity. — [Hippocrates]

The emergency department (ED) is unlike any other branch of medicine, where people face their mortality on a daily basis. In a setting that is inherently ripe with anxiety and fear, emergency physicians and ED staff are trained to calmly diagnose, comfort and treat patients, armed with clinical acumen and best evidence-based practices. When the patient is a child with a rare hematologic or oncologic diagnosis, the need to be armed with clinical expertise is even more paramount. In this edition of *Clinical Pediatric Emergency Medicine*, we hope to share our expertise in an efficient, practical manner and discuss new innovations in our respective fields. Throughout these articles, we also hope to convey the passion and dedication we have to children with these diagnoses.

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A review of sickle cell disease was chosen to begin the edition as it describes so many aspects of the populations we serve. New advances in treatment and supportive care have dramatically improved the quality of life and survival of sickle cell patients. However, a misunderstanding of the intensity of the disease process, and inherent biases within the medical system has often left patients without the expertise needed to fully treat them. Both of these complicated issues are discussed in the article by Drs. Barriteau and McNaull.

The next article by Dr. Woods et al, describes the historic disease of hemophilia, and the exciting new treatment modalities that have come from decades of intensive research. The tables, algorithms and online videos provide easy access to information on how to treat emergencies in hemophilia patients, as well as a review of the novel factor replacements that are currently being used.

To complete our hematology section, Drs. Graham and Rose discuss current strategies for the evaluation and diagnosis of ITP (idiopathic thrombocytopenic purpura), an entity that has undergone considerable treatment changes in our community over the last few decades. AIHA (autoimmune hemolytic anemia) is a complicated disease that requires understanding of the mechanism of hemolysis, and prompt diagnosis and treatment. Formulated in a question and answer style, the article provides quick and accurate guidance in the recognition, evaluation and treatment of these consumptive cytopenias.

We begin the oncology portion of the edition with an overview of clinical trials. The dramatic

improvement in survival of pediatric oncology patients is largely due to clinical research, these children and clinical trials continue to be a mainstay of our community. Many children are actively being treated on research trials, and they add a layer of complexity to the evaluation in the ED. Dr. Lenzen summarizes pertinent information about new drugs and things to consider during the evaluation of these children.

When a child presents with a new likely diagnosis of cancer, it is the emergency physician and ED team that are left with the difficult responsibility of breaking the news to parents and patients. While the heaviness of that initial conversation can never be softened, we hope that providing an algorithm for the diagnosis and initial management of these patients will provide some reassurance as those difficult few hours unfold. Drs. Kar and Hijaya present the latest information on the medical workup and management of acute complications in this scenario.

Once the diagnosis is made and treatment has begun, patients are often at their most vulnerable state. ED visits for fever and chemotherapy induced pancytopenia are frequent and the landscape of antibiotic coverage is ever evolving. Drs. Rossoff and Mithal provide oncology and infectious disease expertise in a concise manner, as management of these patients needs to be timely and efficient.

The next article, by Dr. Lenzen et al, discusses pediatric brain tumors. The authors are varied in their specialties (pediatric endocrinology, neurosurgery, neurology and neuro-oncology) and represent the complex needs of these patients. The acuity of these patient visits to the ED is often high, regardless of whether the patient is newly diagnosed or a 10-year survivor of their disease. Patients are also often enrolled in clinical trials and may have specific parameters for evaluation or may be at risk for unusual side effects based on the chemotherapy agents they have been given. A working knowledge of various presentations and risk factors can help define a clear path for evaluation.

The final hematology/oncology/transplant article offers a review of acute complications in children undergoing stem cell transplantation. Drs. George and Tse have taken a complicated field and compartmentalized the acute evaluation of these children by organ system. This is then followed by a discussion about cellular immunotherapy, with a description of how to recognize and treat cytokine release syndrome and neurotoxicity, two unique complications of this new treatment modality.

This issue of *Clinical Pediatric Emergency Medicine* finishes with three interesting case reports that were presented at the Section on Emergency Medicine's EmergiQuiz Case Competition held at the National Conference and Exhibition of the American Academy of Pediatrics.

In summary, we hope this special edition of the *Clinical Pediatric Emergency Medicine* will prove to be an asset for pediatric emergency care providers, demystifying the care of these children for the newer clinician, and updating the more seasoned clinician on new treatment modalities and approaches to care.