Pediatric Oncologic Emergencies

Melanie K. Prusakowski, MD[a,*], Daniel Cannone, DO[b]

KEYWORDS

• Pediatrics • Oncology • Emergency • Prognosis

KEY POINTS

- Emergency providers who can identify and manage oncologic emergencies can contribute significantly to an improved prognosis.
- Effective care of pediatric malignancies requires an age-appropriate approach to patients and compassionate understanding of family dynamics.
- The overall prognosis for most pediatric cancers is good.

INTRODUCTION

Approximately 12,000 new cancers are diagnosed annually in children and adolescents.[1] Cancer is second only to injury as a cause of death in children older than 3 months.[2] Despite this, the overall prognosis for most pediatric cancers is good. Mortality for all childhood cancers combined is approximately half what it was in 1975, and the survival rates of many malignancies continue to improve. However, the incidence of childhood cancer is significant (**Fig. 1**),[1] and the related emergencies that develop acutely carry significant morbidity and mortality.

Emergency providers who can identify and manage oncologic emergencies can contribute significantly to an improved prognosis. This article focuses on the recognition of oncologic processes, stabilization of the most common emergent situations, and pediatric-specific recommendations for the emergent care of childhood cancers.

EVALUATING PEDIATRIC PATIENTS FOR MALIGNANCY

Symptoms of pediatric cancer result from invasion of body cavities by abnormal cells (eg, marrow invasion resulting in pallor and bruising, space-occupying intracranial

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[a] Department of Emergency Medicine, Virginia Tech Carilion School of Medicine, 1906 Belleview Avenue, Roanoke, VA 24014, USA; [b] Virginia Tech Carilion School of Medicine, 1906 Belleview Avenue, Roanoke, VA 24014, USA
* Corresponding author.
E-mail address: mkprusakowski@carilionclinic.org

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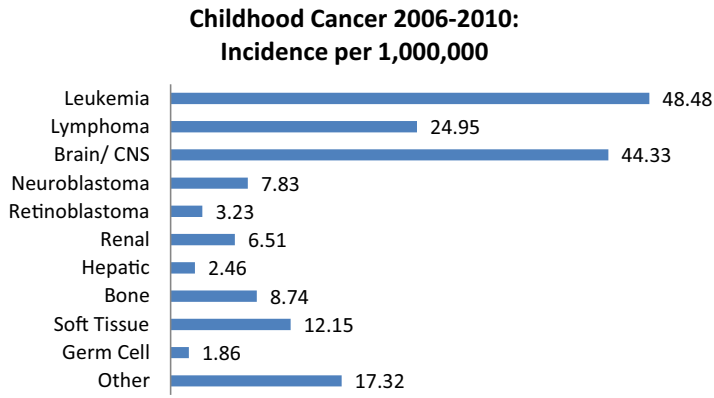

Fig. 1. Incidence of childhood cancer. CNS, central nervous system. (*Data from* Howlader N, Noone AM, Krapcho M, et al, editors. SEER cancer statistics review, 1975-2010. Bethesda (MD): National Cancer Institute. Available at: http://seer.cancer.gov/csr/1975_2010/. Based on November 2012 SEER data submission, posted to the SEER web site, April 2013.)

lesion resulting in vision changes and nausea, abdominal mass causing constipation).[3] Practitioners must maintain a high index of suspicion when assessing such nonspecific symptoms.

When a potential malignancy is suspected, the initial management should focus on a complete and careful history and physical examination. Historical factors and physical examination findings that can suggest malignancy in pediatric patients are listed in **Table 1**.[4] If malignancy is suspected, laboratory evaluation may include a complete blood count to evaluate for leukocytosis, leucopenia, anemia, or thrombocytopenia; peripheral blood smear to evaluate for abnormal cell proliferation; lactate dehydrogenase; uric acid; liver function tests; serum creatinine; and a full electrolyte panel including calcium, magnesium, and phosphorus.[3] Multiple imaging modalities are used to evaluate pediatric patients with possible malignancy or associated malignancy-related emergencies (discussed later).

Table 1
History and physical examination factors concerning cancer

Historical factors concerning for cancer	Pain without injury or out of proportion to reported mechanism
	Unexplained weight loss
	Nausea and vomiting, especially if worse when waking or supine
	Headache associated with waking or supine position
	Balance issues or gait problems
	Unexplained fevers, especially if prolonged
	Intussusception in children older than 2 y
Physical examination factors concerning for cancer	Diffuse lymphadenopathy, especially if supraclavicular, matted, immobile, nontender, or associated with hepatosplenomegaly
	Palpable abdominal mass
	Unexplained bruising with or without pallor
	Ataxia
	Focal weakness
	Leukocoria
	Painless unilateral testicular enlargement