Emergency Cancer Care

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The current state of acute oncology training for emergency physicians: a narrative review

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Abstract

Patients with cancer represent a growing population of patients seeking acute care in emergency departments (ED) nationwide. Emergency physicians are expected to provide excellent, consistent care to all ED patients; however, emergency medicine (EM) education and training of acute oncology is lacking.

To explore this topic, the Society for Academic Emergency Medicine Oncologic Emergencies Interest Group recruited experts in the field to provide a narrative description of the current state of EM education relating to acute oncology. This review of expert opinions explores the current state of acute oncology education in EM and identifies key content gaps that merit early investment.

Current emergency physician training and knowledge relating to acute oncology likely reflects the American Board of Emergency Medicine Model of Clinical Practice. Key topics such as immunotherapy are absent from the most recent revision of the Model of Clinical Practice and consequently represent a knowledge gap for large numbers of emergency physicians. Additionally, there is limited penetration of guideline-based care for symptom management in the ED setting. As such, additional attention should be provided to training programs and research efforts to address these knowledge gaps.

In conclusion, the current state of acute oncology education and training of emergency physicians is lacking and merits significant investment to assure the ability of emergency physicians to provide superior care for the growing population of patients with cancer.

Keywords: Acute oncology, Oncology curriculum, Oncology education, Emergency medicine training

Introduction

Emergency medicine (EM) physicians are expected to expertly assess, diagnose, and treat patients with a variety of conditions and illnesses ranging from minor complaints to life- and limb-threatening situations. The "Anyone, Anything, Anytime" mantra resonates with many emergency providers and the training of emergency physicians is geared toward the recognition and effective management of acute illness and acute complications of chronic diseases across the age and illness spectrum [1]. However, there is a growing emergency department (ED) population that may not traditionally be at the forefront of the emergency physician's mind when describing the typical ED patient: the patient with cancer.

Nationally representative data from the Nationwide Emergency Department Sample estimated that greater than 4% of adult ED visits were made by patients with a cancer diagnosis [2]. This suggests that every ED provider will treat on average one patient with cancer per shift. Patients with cancer present with a variety of chief complaints of variable acuity and are admitted at exceedingly high rates (≈60%) [2, 3]. The care of these patients is often variable and based on where they initiate ED care [4].

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Advances in cancer treatment and an aging population have led to an increasing number of patients surviving and living with cancer. As a result, the utilization of ED care for acute complications of new cancers and cancer treatments will continue to increase. Emergency physicians are expected to provide excellent, consistent care to all ED patients including the growing ED population with cancer; however, to successfully accomplish this goal, EM education and training in acute oncology requires updating.

To better understand the unmet educational needs and training gaps among emergency physicians, we conducted a narrative review of both expert opinion and the limited amount of published literature in oncologic EM.

Methodology

Volunteers were recruited from the Society for Academic Emergency Medicine (SAEM) Oncologic Emergencies Interest Group to provide expert opinion on the current state of EM education relating to acute oncology. SAEM is a major US-based not-for-profit organization founded in 1989 with the stated mission to lead the advancement of academic EM through education, research, and professional development [5]. The Oncologic Emergencies Interest Group was created in 2018 with the goal of advancing the field of acute oncologic EM. All volunteers are included in the authorship group and are comprised of US-based board-certified emergency physicians with 4–17 years of experience practicing in geographically diverse settings and a variety of clinical environments including community, academic, and Comprehensive Cancer Center locations. The authorship group includes all 3 of the Interest Group's chairs since its creation (JMC, ABC, NRP). Input was obtained in a virtual manner over a 6-month period (May–October 2021) until thematic saturation was obtained through open discussion resulting in the iterative development of this manuscript. The primary themes of assessing the current state of acute oncology education and the implications for education and training in EM were based on an Interest Group didactic session presented in May 2021 at the 2021 Virtual SAEM Annual Conference. The additional themes identified were identified through open discussion. This manuscript reflects a qualitative review based on the expertise of the assembled authorship group and the limited, currently Medlineindexed literature pertinent to the SAEM Interest Group objective to evaluate the current state of EM education and training in acute oncology.

Discussion

Current state of acute oncology education

Emergency physician residency training aims to prepare new graduates to handle a large variety of acute clinical presentations. These clinical scenarios have been categorized into core content as described by the American Board of Emergency Medicine (ABEM) Model of Clinical Practice. Currently, the 2016 Model of Clinical Practice is used to inform the annual In-Training Examination (ITE) reflecting the ABEM Model of Clinical Practice used to gauge a resident's academic progress [6, 7]. As such, current residency training likely reflects the content categories of the 2016 Model of Clinical Practice. Notably this model does not include an oncology-specific core content category. Furthermore, there have been advances in cancer treatment with new side effect profiles and changes in symptom management of which EM training programs may be less aware. As a result, it is likely that acute oncology education and training of EM residents lags behind current knowledge. A national survey of residency programs directors revealed that 91% of respondents either agreed or strongly agreed that oncology topics are of critical importance to the preparation of emergency physicians, yet only 65% felt their residency program's didactic curriculum fully prepared residents for the recognition and management of oncologic emergencies [8]. Notably, EM oncology topics are mostly covered through asynchronous material or indirectly within other themes consistent with the 2016 Model of Clinical Practice, that includes several oncology-related topics across the core content areas. Neutropenic fever, palliative care, lymphomas and leukemias, cord compression, tumor lysis syndrome, and hypercalcemia are included in the 2016 Model of Clinical Practice and were the topics most likely to have devoted didactic time per residency program directors.

Even when treating neutropenic fever, a topic traditionally emphasized during EM residency training, emergency physicians often fail to appropriately manage these patients. A survey of emergency physicians affiliated with a Comprehensive Cancer Center revealed that only 26% were familiar with specialty society guidelines for risk stratification and management of patients with febrile neutropenia [9]. These concerning data suggest a potential lack of quality education in addition to the significant variations noted between programs [8].

A taskforce convenes every 3 years to review and update the ABEM Model of Clinical Practice. The most recent revision in 2019 resulted in significant changes, including the addition of an oncology section within Category 8, Hematologic and Oncologic Disorders (Table 1) [10]. This important change and emphasis on acute oncology will likely increase awareness of the topic within the EM community when the 2019 version takes effect in 2022 for the ITE. However, there were no significant changes in the oncology-related topics within the new Model of Clinical Practice. Key topics such as immune-related adverse events (irAEs) secondary to

Table 1 Current curricular topics

2019 model of the clinical practice content relating to oncological emergencies [9]
Cancers of the skin
Febrile neutropenia
Hospice referral
Hypercalcemia of malignancy
Hyperviscosity syndrome
Leukemia
Lymphomas
Malignant pericardial effusion
Medication-induced Immunosuppression (chemotherapy, steroids, targeted immune modulators)
Multiple myeloma
Radiation colitis
Radiation emergencies
Spinal cord compression
Superior vena cava syndrome
Palliative care
Tumor hemorrhage
Tumor lysis syndrome
Transplant-related immunosuppression
Transplant-related rejection

immunotherapy and chimeric antigen receptor T cell therapy are notably absent from the most recent revision. Despite the common use of immunotherapy in cancer treatment regimens, this treatment modality is unfamiliar to the majority of EM-trained physicians, as only 17% of programs provide education on the topic [8]. Further review of this content section is warranted in the next iteration of the ABEM Model of Clinical Practice.

Implications for education and training in EM

Studies have shown that cancer patients are more likely to visit an ED for acute care when compared to the general population [11]. Due to the increasing frequency of patients with cancer presenting to the ED for acute complications of their primary cancer or cancer treatment regimen, emergency physicians should acknowledge their vital role in the care of patients with cancer. As noted above, significant gaps exist in the current knowledge base of practicing physicians regarding established cytotoxic treatment complications (e.g., neutropenic fever) and in the training and education of EM residents regarding novel treatment modalities and associated acute complications. A prime example of the latter is the increased usage of immune checkpoint inhibitor therapy for cancer treatment. It is estimated that approximately 36% of US patients with cancer were eligible for immune checkpoint inhibitor therapy in 2019 [12]. This treatment modality has a very diverse side effect profile that can be late in onset, requiring specific management methods. Therefore, due to the delayed presentation of irAEs, it is likely that patients treated at a regional cancer center will present to local EDs for irAE care. As such, additional attention should be provided by training programs to complement traditional didactics with focused education addressing immunotherapy and irAEs [13].

In addition to updated education on novel treatment advances and their side effects, EM education on oncologic emergencies should reflect training to manage the common ED chief complaints for the cancer patient population. Increased exposure to different methods for the management of common post-treatment symptoms, pain management in a patient on chronic high dose opioids, and training in the nuances that exist in the management of chronic and acute conditions such as stroke, congestive heart failure, and myocardial infarction that may differ in cancer patients are additional educational objectives that require attention [14].

Standardization and dissemination of education

Current curricula are variable and require standardization. Programs associated with a Comprehensive Cancer Center may benefit from local resources, however, additional support provided by national organizations to help standardize acute oncology education of all EM residents and practicing physicians is warranted. This can be achieved by a variety of approaches: (1) the open publication and sharing of curricular modules that have been previously or are currently in development by residency programs, national interest groups, and current programs that have oncologic EM fellowships [14–16]; (2) the adoption of specialty-specific guidelines by national EM organizations [17, 18]; and (3) leveraging and recognizing current bedside care as key learning opportunities [19]. In addition to trainees, practicing emergency physicians require additional training opportunities addressing this topic. Due to the decentralized nature of emergency care and the diverse practice locations of the current workforce, such educational efforts will require leadership from national societies via policy statements, endorsement of practice guidelines, and inclusion of oncology-related topics in annual conferences.

Unmet needs and future work

The challenges facing emergency physicians in the new oncology treatment paradigm are significant and require a new focus by emergency physicians [20]. In addition to education and training initiatives, new research efforts focused on this population are needed to help inform future EM-based acute oncology care. (Table 2) The

Table 2 Knowledge gaps requiring investment

Gaps in current curriculum
Effects of oncology treatment on common emergency presentations
Immunotherapy treatments and associated immune-related adverse events (irAEs)
Need for emergent oncological treatment of the newly diagnosed cancer patient with cancer
Surgical procedures and complications in patients with cancer
Symptom and side effect management in patients with cancer
Gaps in research efforts
Care utilization across the age continuum and rural/urban divide
Diagnostic pathways
Implementation science barriers to oncology evidence-based medicine
Risk stratification
Social determinants of health affecting acute care of patients with cancer

Comprehensive Oncologic Emergencies Research Network (CONCERN) was established with support from the National Cancer Institute to expand the knowledge around treatment of oncologic emergencies in the EM setting by facilitating collaborations across oncology and EM [21]. Additional research efforts are required in several areas including (1) care utilization across the age continuum and rural/urban divide, (2) risk stratification tailored to the ED population with cancer, (3) diagnostics pathways that account for cancer-related factors, and (4) barriers to the implementation of evidence-based medicine for patients with cancer in the unique ED context. As research efforts improve our understanding of this topic, curricula will require frequent updating.

Limitations

This manuscript represents a qualitative compilation of expert opinion and narrative review of the limited available literature addressing the topic of oncologic EM education. As noted above, this field requires significant investment and EM curricula, and as a result, this review will require frequent updating.

Conclusion

The current state of acute oncology education and training of emergency physicians is lacking and requires significant investment to assure the ability of emergency physicians to provide up-to-date care for the growing population of patients with cancer.

Presentations

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Authors' contributions

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