Advances in Radiation Oncology (2020) **5**, 289-291

advances
in radiation oncology

www.advancesradonc.org

Brief Opinion

Introducing Multidisciplinary Oncology Management to the Medical Student

Michael J. LaRiviere, MD,[a,*] Patricia Mae G. Santos, MD,[b] Joshua A. Jones, MD,[a] John Nicholas Lukens, MD,[a] Neha Vapiwala, MD,[a] Samuel D. Swisher-McClure, MD, MSHP,[a] and Abigail T. Berman, MD, MSCE[a]

[a]*Department of Radiation Oncology, University of Pennsylvania, Philadelphia, Pennsylvania and* [b]*Department of Medicine, Memorial Sloan Kettering Cancer Center, New York, New York*

Received 31 July 2019; revised 17 October 2019; accepted 21 October 2019

Abstract

Despite the fact that a large portion of medical students pursue training in a cancer-related discipline, oncology is emphasized to a disproportionately lesser extent than are other disciplines in medical school. Medical students have wide gaps in their oncology-specific knowledge, and undergraduate medical education fails to address the multidisciplinary nature of oncology. To address these shortcomings and improve medical students' understanding of the multidisciplinary nature of oncology, we have instituted a clinical oncology elective for medical students: an optional, 2-day session held after classes and promoted by student interest groups. Day 1 comprised a series of short faculty lectures beginning with the concepts of and rationale for staging, an approach to breaking bad news, guideline-based management, and multidisciplinary tumor board discussion. Three multidisciplinary tumor boards were simulated on the second day, run by attending surgeons, medical oncologists, and radiation oncologists with expertise in the cancer of interest, using real patient examples. Ultimately, the clinical oncology elective shows medical students how the oncology care team works together to care for cancer patients.

Every year, approximately 1000 students and residents pursue training in the US in a core cancer-related discipline: radiation oncology (187), medical oncology (577), pediatric oncology (158), gynecologic oncology (68), or surgical oncology (66).[1,2] The number of trainees pursuing careers in other specialties who work on the oncology care team—hospice and palliative medicine, pathology, radiology, interventional radiology, and a number of interventional medical and surgical specialties—is far higher. Yet oncology is emphasized to a disproportionately lesser extent than other disciplines in medical schools' undergraduate curricula.[3] Currently, medical students gain exposure to selected facets of oncology through specific preclinical lectures and didactic blocks, such as the basics of hematologic malignancies through their hematology and immunology lectures and solid malignancies in their pathology lectures. Students may look after hospitalized cancer patients during their core internal medicine clerkship, they may assist with oncologic surgeries on their surgery and gynecology blocks, and they may learn about interpreting imaging for cancer patients in their radiology course. But these scenarios offer only a glimpse of oncology, in contrast to the extensive anatomy, physiology, pathology, workup, diagnosis, and treatment considerations

Sources of support: none.
Disclosures: none.

* Corresponding author: Michael J. LaRiviere, MD; E-mail: michael.lariviere@uphs.upenn.edu

https://doi.org/10.1016/j.adro.2019.10.004

students learn about in such fields as cardiology, nephrology, and others. Medical students have wide gaps in their oncology-specific knowledge, from a lack of understanding of management basics[3] to long-term therapy toxicities and survivorship, radiation oncology, and hospice and palliative medicine.[4] More importantly, undergraduate medical education fails to address the multidisciplinary nature of oncology, a unique and critical aspect of this field. Some have sought to address these shortcomings through student oncology interest groups,[5] tumor board shadowing,[6,7] and short, multiday oncology courses.[8]

To address this gap in undergraduate medical education and improve medical students' understanding of the multidisciplinary nature of oncology, we have combined the approaches others have taken to institute a clinical oncology elective for medical students. An optional, 2-day session held after classes and promoted by student interest groups, the clinical oncology elective is designed for first- through final-year medical students with career interests in any field—including those with traditionally little overlap with oncology, the rationale being that most physicians will, at some point, take care of a patient with cancer, and it behooves us all to have a basic understanding of the associated management and treatment approach.

Day 1 of the Clinical Oncology Elective comprised a series of short faculty lectures. First, an introduction entitled "Approach to the Cancer Patient" introduced students to the concepts of and rationale for staging, Baile et al's SPIKES approach to breaking bad news,[9] guideline-based management, and multidisciplinary tumor board discussion (supplementary material, available online at https://doi.org/10.1016/j.adro.2019.10.004). This lecture was followed by short talks given by members of the entire oncology care team—a surgeon, a radiation oncologist, a radiologist, and a palliative care physician, in addition to a medical oncologist and a pathologist—each introducing their role in the management of cancer patients. Because preclinical oncology didactics tend to be given by basic scientists, medical oncologists, and pathologists,[3] this structure was intended to emphasize the large multidisciplinary team that cares for cancer patients.

Table 1 Simulated tumor boards

Disease site	Patient example	Discussion points
Head and neck tumor board	Medically operable p16-positive locally advanced oropharynx cancer	• Appropriate workup • Anatomic staging considerations • Evidence behind risks and benefits of transoral robotic surgery (TORS) versus definitive chemoradiation; this patient actually underwent TORS • Operative approach • Surgical pathology, which found high-risk features • Evidence for adjuvant therapy; the medical oncologist and radiation oncologist recommended adjuvant chemoradiation
Breast tumor board	Internal mammary node-positive locally advanced breast cancer	• Discussion of workup led by a radiologist, with time spent reviewing initial mammogram, ultrasound, and MRI images • Biopsy slides projected and reviewed by a pathologist • Evidence behind neoadjuvant chemotherapy • MRI for response assessment, images reviewed by the radiologist • Operative approach (mastectomy and reconstruction) • Surgical pathology slides showing residual disease were reviewed by the pathologist • Discussion of adjuvant radiation, including a consideration of which nodal volumes to treat and to what dose, given a positive internal mammary node • Further adjuvant chemotherapy
Thoracic tumor board	Nonbulky mediastinal node-positive non-small cell lung cancer	• Tumor node metastasis staging considerations discussed with respect to the patient's CT images • Bronchoscopic biopsy approach discussed by an interventional pulmonologist • Staging based on nodal sampling, discussed by a pathologist • Evidence behind a trimodality approach incorporating surgery versus definitive chemoradiation; this patient actually underwent neoadjuvant chemoradiation followed by surgery • Surgical pathology findings reviewed by the pathologist • Adjuvant systemic therapy considerations • Follow-up considerations; this patient unfortunately went on to develop a nodal recurrence

Abbreviations: CT = computed tomography; MRI = magnetic resonance imaging.

Three multidisciplinary tumor boards were simulated on the second day. Each tumor board was run by attending surgeons, medical oncologists, and radiation oncologists with expertise in the cancer of interest. Real patient examples were used (Table 1). The goal of the second day was not to teach any specifics of staging and management but to demonstrate the importance of a group approach to appropriate workup; the relevance of anatomy to staging, surgical, and radiation therapy considerations; the fact that different treatment options are available; and how specialists with different understandings of the literature, different preferences, and different views with respect to the risks and benefits of their treatment versus their colleagues' treatments can discuss their areas of agreement and disagreement to arrive at a consensus. Ultimately, this shows medical students how the oncology care team works together with a singular goal of delivering excellent, optimal patient care. In our next iteration of the clinical oncology elective, we aim to collect survey and pre- and post-course testing data from students to better understand whether the elective has augmented their understanding the clinical oncology team, if improvements should be made to the course's format and length, and how many students attended the prior year's elective and would plan to participate in the following year's course. We look forward to reporting these data and would encourage other groups implementing similar courses to do the same.

Acknowledgments

Dr LaRiviere, Dr Santos, Dr Jones, Dr Lukens, Dr Vapiwala, Dr Swisher-McClure, and Dr Berman conceptualized and designed this work, drafted and critically revised this manuscript, and give final approval for the version submitted.

Supplementary data

Supplementary material for this article can be found at https://doi.org/10.1016/j.adro.2019.10.004.

References

1. NRMP. National Resident Matching Program, results and data: 2018 main residency match. Available at: https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2018/04/Main-Match-Result-and-Data-2018.pdf. Accessed November 14, 2019.
2. NRMP. National Resident Matching Program, results and data: Specialties matching service 2019 appointment year. Available at: https://mk0nrmp3oyqui6wqfm.kinstacdn.com/wp-content/uploads/2019/02/Results-and-Data-SMS-2019.pdf. Accessed November 14, 2019.
3. Mattes MD, Patel KR, Burt LM, Hirsch AE. A nationwide medical student assessment of oncology education. *J Cancer Educ*. 2016;31:679-686.
4. Oskvarek J, Braunstein S, Farnan J, et al. Medical student knowledge of oncology and related disciplines: A targeted needs assessment. *J Cancer Educ*. 2016;31:529-532.
5. Agarwal A, Shah A, Byler S, Hirsch AE. Cultivating interest in oncology through a medical student oncology society. *J Cancer Educ*. 2017;32:31-34.
6. Mattes MD, Gerbo R, Dattola RM. Tumor board shadowing for medical students as a means of early exposure to multidisciplinary oncology education. *J Am Coll Radiol*. 2017;14:253-255.
7. Tsui JM, Grewal NKS, Sivapragasam M, et al. Tumor board shadowing: A unique approach for integrating radiation oncologists into general medical student education. *Int J Radiat Oncol Biol Phys*. 2019;104:773-777.
8. Granek L, Mizrakli Y, Ariad S, et al. Impact of a 3-day introductory oncology course on first-year international medical students. *J Cancer Educ*. 2017;32:640-646.
9. Baile WF, Buckman R, Lenzi R, Glober G, Beale EA, Kudelka AP. SPIKES-A six-step protocol for delivering bad news: Application to the patient with cancer. *Oncologist*. 2000;5:302-311.