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A focused curriculum in surgical oncology for the third-year medical students

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ABSTRACT

Background: Educating medical students in surgical subspecialty fields can be challenging, and the optimal timing and curriculum remain unknown. Despite advocacy for earlier exposure, competing core clerkship rotations often leave little time for subspecialty fields. We report our experience with a novel, short, and focused curriculum in surgical oncology for the third-year medical students.

Methods: A 2-wk (2009–2010) and a 4-wk (2010–2011) curriculum in surgical oncology were developed for the third-year students at a tertiary-referral cancer center, including formal didactics, rotation in clinical service of students' choosing (breast, gastrointestinal, endocrine, or melanoma), and case-based learning and presentation. Paired pre- and post-rotation questionnaires were prospectively completed, including 20 items assessing knowledge and four items assessing experience. Grading was anonymous, and change in score was assessed by Wilcoxon signed-rank test.

Results: Paired questionnaires from 47 students (2-wk rotation, $n = 26$; 4-wk rotation, $n = 21$) showed a median improvement of three points (21.4%) from pre- to posttests ($P < 0.001$). The improvement did not differ by the length of rotation or by the specific clinical service. Nearly all (93%) reported a positive and inspiring experience. The most valuable avenue of learning was reported as the time spent with resident or fellow or attending (92%), followed by self-directed reading (62%) and didactic lectures (28%).

Conclusions: A short and focused curriculum in surgical oncology, including structured didactics and clinical rotation, had positive impact for the third-year students. Given the increasing work-hour limits, it is important to note that the time spent in the clinical setting continues to be ranked as the most educationally valuable by medical students.

1. Introduction

More than 1.6 million individuals are expected to be diagnosed with cancer in 2013 in the United States [1]. Cancer has consistently represented the second most common cause of death, claiming >560,000 adult lives annually [2]. Educating health care providers regarding cancer is therefore of paramount importance [3]. Because cancer disciplines such as the

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surgical oncology and medical oncology represent subspecialty fields, exposure of students of medical school to these oncology disciplines is often limited. Indeed, clinical rotations in these subspecialty fields are commonly delayed until late in the final year of the medical school, after major decisions for the field of residency training and/or an ultimate career have already been made. Additionally, because standard school curriculums usually do not include subspecialty rotations, exposure of medical students to subspecialty fields is not uniform and depends largely on individual choices of elective rotations. Taken together, these factors lead to potential missed educational experiences and opportunities to attract medical students to oncology-related specialty fields.

In surgical education, little is known about providing medical students early exposure to the field of surgical oncology. Recently, earlier exposure to surgical specialty fields has been advocated for medical students, with the benefits of improving career choices and career development [4,5]. However, major core clerkship rotations (i.e., in medicine, surgery, obstetrics or gynecology, pediatrics, and psychiatry) leave little time for subspecialty clerkships during the traditional third-year curriculum. Surgical educators have proposed inserting short focused rotations in surgical subspecialties as a part of the third-year core general surgery clerkship [6–9]. However, the feasibility and the educational impact of such a focused curriculum in surgical oncology during the third-year of medical school have not been examined. We herein describe our experience with a structured and focused curriculum in surgical oncology as a part of the longer core general surgery clerkship for the third-year medical students.

2. Methods

2.1. *Description of the focused curriculum in surgical oncology*

A focused curriculum in surgical oncology was incorporated as a part of the required core clerkship in surgery during the third year for medical students at the University of Texas School of Medicine, Houston. The overall core clerkship in surgery emphasized basic clinical and surgical skills as applied to a common core of presenting problems. Through clinical rotations at a variety of hospitals and practices, students gain exposure to preoperative, postoperative, traumatic, and ambulatory care of surgical patients. Hospitals participating in the core surgical rotations included a large metropolitan comprehensive health system, a county district hospital, and a tertiary-referral comprehensive cancer center. The total length of the core surgery rotation is 8 wk. At least 4 wk of the clerkship is spent on a general surgical service at the comprehensive metropolitan hospital. The remaining time of the clerkship is spent working on a general or specialty surgical service at one or two of the three participating hospitals.

The University of Texas MD Anderson Cancer Center (UTMDACC) served as one of the three rotation sites for the third-year core clerkship in surgery. To provide students a uniform and substantive exposure to the subspecialty of surgical oncology, a structured curriculum was designed and planned by the members of the Education Committee within the Department of Surgical Oncology at UTMDACC. The same rotation curriculum was delivered to each small group of two to four students who sequentially rotated through UTMDACC.

The curriculum contained three core components (summarized in Table 1). The first component was didactic lecture teaching that addressed topics including cancer epidemiology, the biologic behavior of primary and metastatic malignancy, cancer staging, the roles of the surgical oncologist in multidisciplinary cancer care, operative principles, and choosing surgical oncology as a career. A single standardized lecture was developed and delivered by a core group of faculty members representative of various clinical services within surgical oncology including breast, gastrointestinal, endocrine, and melanoma or sarcoma. Each rotating group of students received the same standardized lecture but delivered by a rotating member of the core group of faculty. This lecture was followed by a 3-h, proctored, hands-on, didactic surgical skills session. Students were oriented to the operating room, learn about sterility procedures, and practice basic surgical skills such as knot tying and suturing.

The second component was clinical rotation in a clinical service of the students' choice, including breast, melanoma, gastrointestinal, or endocrine surgical oncology. An apprentice model was used, in which one student was paired with one individual surgical faculty in the chosen clinical service. A core group of surgical faculty voluntarily participated in medical student curriculum, and this group was consistently maintained throughout the study period. The student accompanied the assigned faculty in the outpatient clinic, inpatient service, and the operating room. The student additionally interacted with the surgical oncology fellows, residents, and mid-level providers who work with the faculty. Students were actively encouraged to observe operative procedures in other clinical services to gain additional exposure. The length of the clinical rotation was 2 wk in the academic year 2010–2011 and 4 wk in the academic year 2011–2012.

The final component was a moderated case presentation or lecture where each student presented a clinical patient encounter of their choice and summarized key learning points for other students. Students were asked to self-direct textbook reading and literature review related to their chosen case in preparation. The same surgical oncologist who provided the initial didactic lecture moderated the presentation or lecture. There was also additional time allotted for discussion about surgical oncology as a discipline and about career development in surgery and medicine in general.

2.2. *Rotation questionnaire*

A rotation questionnaire was designed to include 20 knowledge questions that assessed students' general knowledge and comprehension regarding surgical treatment of cancer and four experience questions that assessed students' satisfaction and experience with the rotation (Table 2). The knowledge and comprehension questions were pilot tested by fellow and faculty members of the Education Committee. The content included cancer epidemiology, molecular biology, prophylactic and palliative surgery, surgical treatment of