The Surgical Clerkship and Medical Student Performance in a Standardized Patient Case of Acute Cholecystitis

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BACKGROUND: Although an Observed Structured Clinical Examination (OSCE) has been used to evaluate patient interaction and general knowledge competencies of third-year students during their required surgical clerkships, whether surgical clerkship experience predicts satisfactory performance with a surgical patient in an OSCE environment has not been investigated.

OBJECTIVE: We hypothesized that completion of the third-year surgery clerkship would improve student ability to diagnose acute cholecystitis and recognize the further need for hospital admission and treatment.

DESIGN: An observational study design was used to determine student skills in evaluating a simulated surgical patient with abdominal pain from acute cholecystitis. The skills included key data gathering, physical examination, and information-sharing tasks.

SETTING: Tertiary care academic medical center.

PARTICIPANTS: Performance was compared between a cohort of 101 medical students who had completed the third-year surgical clerkship and 72 who had not. A secondary analysis compared performance for 91 students who had completed their third-year clerkship in sites near the University of California, San Francisco School of Medicine, and 10 who did so at a regional campus geographically distant from the medical school.

RESULTS: Of the 173 students who participated in the OSCE, only 42% correctly identified the diagnosis of acute cholecystitis, though 71% did suggest the possibility of a biliary process to the standardized patient. Most of the students who identified the condition as acute cholecystitis or gallbladder-related process had completed their third-year surgical clerkship (odds ratio [OR] = 3.26). Students who completed their surgical clerkship were also better able to recommend appropriate treatment for the patient (OR = 2.35), and recommend admission to the hospital or emergency department (OR = 2.00). Approximately one-third (35.3%) of all students documented a positive Murphy's sign, but only 6.4% identified the triad of leukocytosis, fever, and a Murphy's sign as diagnostic of acute cholecystitis and the need for surgical intervention. Student performance on the clinical examination did not differ depending on whether the students completed their clerkship at a Bay Area or regional hospital.

CONCLUSIONS: Student recognition of the key physical examination and laboratory findings diagnostic of acute cholecystitis was low, but students were better able to recommend further treatment for a patient with acute cholecystitis after completing the third-year surgical clerkship. Our study reveals areas where surgical educators can improve medical student ability to accurately diagnose acute cholecystitis and evaluate acute abdominal processes. (J Surg Ed 72:1045-1051. © 2015 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: medical student, surgery clerkship, standardized patient, abdominal pain, regional campus

COMPETENCIES: Patient Care, Medical Knowledge, Interpersonal and Communication Skills

INTRODUCTION

Undergraduate medical education addresses 6 core competencies: patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills,

Disclaimers: This study was performed in compliance with our institutional Ethical Board and/or Committee.

This work was presented at the AAMC Group on Regional Medical Campuses meeting in Philadelphia in 2013.

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professionalism, and systems-based practice. In medical school, progress in each of these competencies is evaluated in several ways. Medical students must pass written examinations, clinical clerkships, and simulated patient experiences, which are critically important for providing a structured environment for students to demonstrate their ability to integrate the various core competencies into practice.[1]

The third-year surgical clerkship is the primary opportunity for medical students to learn about surgical disease and treatment in medical school. Previous studies have used an Observed Structured Clinical Examination (OSCE) to evaluate clinical and patient interaction skills and general knowledge competencies of third-year students during their required surgical clerkships[2-8]; the OSCE has been proven to be a valid method to assess the 6 core competencies outlined by the Accreditation Council for Graduate Medical Education in surgery.[2] Student OSCE performance varies depending on several key factors, including previous completion of a surgical clerkship, surgical clerkship length, and clerkship content.[5-8] Multiple studies have examined the performance of medical students when evaluating simulated general surgical patients, including those with an acute abdominal pain. Student performance has been compared based on exposure to type of patients,[6] number of days on service,[5] and location of the clerkship[6] with little difference noted in the performance with a simulated patient. This contrasts with the study by Lind et al.,[8] which examined the OSCE scores of 487 students and demonstrated that OSCE performance (particularly in an abdominal pain scenario) was higher in students who completed an 8-week surgical clerkship compared with those who completed a 6-week clerkship.[8]

The surgical education literature, however, does not include investigations into whether individual surgical clerkship experience predicts superior performance with a surgical patient in an OSCE environment to diagnose cholecystitis or to recommend appropriate treatment. In this study, we sought to characterize how third-year students did in evaluating and managing a standardized case of the acute abdominal pain. For this, we used a checklist of expected history taking, physical examination, clinical reasoning behaviors, standardized patient (SP) feedback, and interstation exercises. We aimed to identify the specific ways that would improve the ability of students who had completed the third-year surgery clerkship to: (1) diagnose acute cholecystitis, and (2) recognize the further need for hospital admission and treatment.

MATERIAL AND METHODS

Clinical Scenario

At the University of California, San Francisco (UCSF) School of Medicine in the Fall of 2012, the faculty of the UCSF Surgery and Medical Education departments designed a new mini−Clinical Performance Examination (mini-CPX) case, structured similarly to other OSCE exercises used across all 4 years of medical education at UCSF as well as in other U.S. medical schools. The scenario involved a patient with acute cholecystitis, which (1) commonly requires surgical intervention, (2) is addressed in the UCSF medical school curriculum, and (3) is associated with a physical examination finding (Murphy's sign) that the SPs could reproduce on physical examination. Biliary tract disease was introduced in the first-year gastroenterology curriculum at UCSF, and sickle cell disease was discussed in the second-year hematology course.

The management objective for the student was to recognize 3 abnormalities at presentation—fever, leukocytosis, and a Murphy's sign—and recommend admission to either the hospital or emergency department. The scenario of a man with upper abdominal pain prompts a broad differential diagnosis, and we designed the case particularly to challenge students to rule out another common etiology such as peptic ulcer disease (PUD). Additional responses from the SP would clearly have shown a history of a normal endoscopy, negative helicobacter serology, and no improvement after oral H2 blocker therapy, thereby excluding PUD.

The 4 SPs used in the mini-CPX were either African or Asian (sickle cell disease occurs in both but is less common in Asian populations) and were provided a script of responses to student inquiries. SPs were prepared with 20 hours of training and practice before the student exercise and were trained to reproduce a positive Murphy's sign on examination. A total of 173 third-year UCSF medical students participated in an orientation to the mini-CPX and then completed a 17-minute interaction with the SPs as part of the mini-CPX. After the exercise, students underwent a debriefing session where the key teaching points and differential diagnosis were reviewed.

The costs of designing and implementing the acute abdomen case were minimal and included training SPs, the percent time and effort of the physician educators, and the School of Medicine resources to house the exercise and assist in the data analysis.

Performance Evaluation

SPs used a checklist to evaluate medical student performance during the mini-CPX. This checklist contained 30 binary ("yes" or "no") items; 7 of these items pertained to the history taking (e.g., did the student ask the SP about pain after eating or relevant past surgeries), and 23 of these items pertained to physical examination, information sharing, or communication techniques (e.g., did the student press for a Murphy's sign or verbally express empathy). Following the patient encounter, the SP scored if the student completed the action ("yes") or did not for "no" on the checklist.