Implementation of Fellows EBUS Workshop Improves Procedural Knowledge

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Introduction:
Bronchoscopy is a skill learned by pulmonologists during the course of their fellowship training. Endobronchial ultrasound (EBUS), which is performed to visualize airway-adjacent lesions or lymph nodes in the hila and mediastinum, is a skill that is frequently utilized by pulmonologists and increasingly standard of care for diagnosing patients with certain conditions, including lung cancer and sarcoidosis.

A needs assessment of bronchoscopy education for our Pulmonary and Critical Care fellowship program revealed that EBUS is a skill that most fellows wanted to learn and be able to perform independently, but most fellows felt they were not receiving sufficient training to accomplish this goal. Bronchoscopy education in our program has traditionally used an apprenticeship model of instruction, however when a validated objective assessment tool, the EBUS-STAT, was used to evaluate our upper-level fellows, this confirmed that fellows are not adequately trained to perform EBUS independently. Simulation has been shown to improve procedural education, including for EBUS, and is now a recommended approach. We endeavored to create a workshop to teach fellows necessary skills to be able to perform EBUS.

Methods:
We developed a half-day EBUS training workshop to teach the cognitive and procedural skills needed to perform EBUS for lung cancer staging. The session workshop included: hands-on transbronchial needle aspiration (TBNA) instruction and practice; interactive lung cancer staging cases using a schematic map; use of a virtual reality EBUS simulator to practice EBUS scope driving and ultrasonographic image identification; and lymph node station CT image identification with anatomy review. Pre- and post-assessments of self-assessed knowledge and confidence with various steps of performing an EBUS procedure, including anatomic knowledge and procedural comfort, were collected using a 4-point Likert scale. Learners were also asked about the usefulness of all portions of the session.

Results:
Prior to the attending the session, few learners agreed/strongly agreed with all self-assessment questions of knowledge and confidence in EBUS procedures. Very few were confident in staging a patient for lung cancer (1/20, 5%), felt they knew the TBNA steps (20%), or felt they knew the mediastinal lymph node stations (35%). Upon completion of the session, self-assessments demonstrated that fellows nearly uniformly agreed that they knew how to identify relevant anatomic structures (90-100%), could identify lymph node stations on CT and EBUS imaging (100%), knew how to perform TBNA (95%), and were confident in staging a patient for lung cancer (85%). Fellows agreed that all components of the workshop were useful and should be included in future sessions. Comments highlighted the interactive and hands-on components of the workshop as being especially useful.

Conclusions:

We found that the apprenticeship approach to EBUS training has been inadequate for teaching this skill in our program. The implementation of an EBUS workshop significantly improved fellows' self-assessed knowledge and confidence in performing EBUS procedures. Additional objective evaluations will be performed to assess knowledge and skill retention following the implementation of this workshop.