[Ann Emerg Med. 2023;81:e115-e152.]

ABSTRACT

This clinical policy from the American College of Emergency Physicians is a revision of the 2010 "Clinical Policy: Critical Issues in the Evaluation and Management of Emergency Department Patients With Suspected Appendicitis." A writing subcommittee conducted a systematic review of the literature to derive evidence-based recommendations to answer the following clinical questions: 1) in ED patients with possible acute appendicitis, can a clinical prediction rule be used to identify patients for whom no advanced imaging is required? 2) in ED patients with suspected acute appendicitis, is the diagnostic accuracy of ultrasound comparable with computed tomography or magnetic resonance imaging for the diagnosis of acute appendicitis? 3) in ED patients who are undergoing computed tomography of the abdomen and pelvis for suspected acute appendicitis, does the addition of contrast improve diagnostic accuracy? Evidence was graded, and recommendations were made based on the strength of the available data.

INTRODUCTION

Abdominal pain is a high-volume, high-risk chief complaint. In 2016, patients with abdominal pain composed 8.6% of emergency department visits. Almost 200,000 patients are diagnosed with appendicitis each year.[1] Missed diagnosis of appendicitis remains an area at high risk of litigation.[2] Among children, appendicitis is the fifth most common cause of malpractice litigation against emergency physicians.[3] The diagnosis of appendicitis can be challenging even in the most experienced of clinical hands.

Despite the increasing use of computed tomography (CT) in patients with possible appendicitis, such widespread use may be unnecessary. Traditional teaching suggests that clinical indicators (eg, signs, symptoms, and laboratory tests) exist that may be used to identify patients with acute appendicitis. It has been suggested that such indicators may be used to facilitate the early identification of ED patients who have acute appendicitis. Of particular interest to the emergency physician is the identification of patients who are so unlikely to have appendicitis that they do not warrant imaging to confirm the diagnosis. Similarly, patients with high clinical suspicion of appendicitis may be referred to a surgeon with minimal or no testing.[4]

Once the decision is made to use imaging, performing a CT may or may not involve the use of contrast. If contrast is used, does it increase diagnostic performance in a clinically meaningful way? In children, some clinicians use ultrasound before or in lieu of CT to diagnose appendicitis. Although ultrasound does not involve ionizing radiation or the risks associated with contrast, the accuracy of either a positive or negative ultrasound result merits discussion. More recently, magnetic resonance imaging (MRI) has been suggested as an alternative imaging modality in patients with suspected appendicitis because it also does not involve ionizing radiation. Understanding the differences in diagnostic accuracy of ultrasound, CT, and MRI can inform decisions about choosing the imaging modality.

This policy is an update of the 2010 American College of Emergency Physicians (ACEP) "Clinical Policy: Critical Issues in the Evaluation and Management of Emergency Department Patients With Suspected Appendicitis."[5] All the previous critical questions from the 2010 policy were updated in this version with some expansion with different comparators. The prior questions were the following: (1) can clinical findings be used to guide decisionmaking in the risk stratification of patients with possible appendicitis? (2) in adult patients with suspected acute appendicitis who are undergoing a CT scan, what is the role of contrast? (3) in children with suspected acute appendicitis who undergo diagnostic imaging, what are the roles of CT and ultrasound in diagnosing acute appendicitis?

METHODOLOGY

This ACEP clinical policy was developed by emergency physicians with input from medical librarians and a patient safety advocate. It is based on a systematic review and critical, descriptive analysis of the medical literature and is reported in accordance with Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.[6]

Search and Study Selection

This clinical policy is based on a systematic review with a critical analysis of the medical literature meeting the inclusion criteria. Searches of PubMed, SCOPUS, Embase, Web of Science, and the Cochrane Database of Systematic Reviews were performed by a librarian. Search terms and strategies were peer reviewed by a second librarian. All searches were limited to human studies published in English. Specific key words/phrases, years used in the searches, dates of searches, and study selection are identified under each critical question. In addition, relevant articles from the bibliographies of included studies and more recent articles identified by committee members and reviewers were included.

Two subcommittee members independently read the identified abstracts to assess them for possible inclusion. Of