Invited Commentary

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Reducing Imaging in Pediatric Appendicitis: Another Surgeon's Perspective

Richard A. Falcone, Jr, MD, MPH, MMM

In their article "A Standardized Diagnostic Pathway for Suspected Appendicitis in Children Reduces Unnecessary Imaging," D'Cruz et al. describe the impact of a standardized pathway to reduce imaging in the evaluation of pediatric appendicitis. They are certainly not the first group to demonstrate the benefits of a standardized pathway for appendicitis, Warner et al.[1] published on the benefits of a standardized pathway in 1998. Many others have followed over the ensuing 23 years, including recently in this same journal when Goldman et al.[2] published their paper demonstrating a decrease in computed tomography (CT) use for pediatric appendicitis in the community hospital setting. One of the unique aspects of the current article is that it is perhaps the first to specifically examine the use of magnetic resonance imaging (MRI) to reduce overall imaging. The authors demonstrated a reduction of patients with an intermediate likelihood of appendicitis requiring more than one study from 31% to 13% by essentially reducing the use of ultrasound as a first imaging choice and moving directly to MRI. However, this did increase the overall imaging costs and had no impact on the negative appendectomy rate. Therefore, it is crucial to consider other potential approaches to reducing unnecessary imaging and delays in diagnosing pediatric appendicitis.

Ultrasound is a valuable tool in evaluating pediatric appendicitis but is a user-dependent tool. The confidence of the providers in their radiologist and the clarity of the ultrasound report can significantly impact the reliability of ultrasound and, therefore, the use of additional imaging studies. Although there may be value in ultimately moving to MRI rather than CT when clinical exam plus or minus ultrasound remains indeterminate, it is important not to abandon the use of ultrasound in the pediatric population completely. In this particular article, the authors report a nondiagnostic ultrasound as one in which the appendix was not visualized or only partially visualized, irrespective of secondary signs. Based on this definition and the experience of this institution, the nondiagnostic rate of ultrasound was 73%. Unsdorfer et al.[3] recently published their ability to maintain high accuracy and improved reliability with a standardized reporting template demonstrating a reduction from 24% to 9% of cases with an equivocal diagnosis and reducing CT usage from 19% to 9%. Like others, they achieved this level of reliability through a collaborative approach with the surgeons. The surgeons ultimately deciding to operate or not need to have confidence in their radiologist and be able to easily interpret the results.

For an institution with such a high nondiagnostic rate of ultrasounds, seeking other imaging methods is a logical choice. This group was undoubtedly able to reduce the use of multiple imaging modalities to make a diagnosis, which is certainly valuable. However, improving the performance of ultrasound potentially could have reduced additional imaging equally while also reducing cost with no impact on negative appendectomy or missed appendicitis rates. A different, although often overlooked method to reduce imaging is to trust the physical examination of an experienced practitioner. For children with a high pediatric appendicitis score, examination by an experienced surgeon could also reduce imaging needs. Some of us are still comfortable operating on a child for appendicitis without imaging, particularly the preadolescent child or the thin teenage male.

In conclusion, D'Cruz et al. should be commended for looking at their institutional imaging practices and their strengths and weaknesses and working to reduce unnecessary or duplicative imaging in children being evaluated for appendicitis. Although not

*Corresponding author. Address: Richard A. Falcone, Jr, MD, MPH, MMM, Cincinnati Children's Hospital Medical Center, MLC 2023, University of Cincinnati College of Medicine, 3333 Burnet Ave, Cincinnati, OH 45299

PH: 513-636-4200
Email: richard.falcone@cchmc.org

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every institution will find MRI use, as described by the authors, to work best in their system, all institutions should continually evaluate their processes and seek to improve.

DISCLOSURE

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