Assessing the role of ultrasound in identifying acute appendicitis in adults

Descriptor

Determine ultrasound sensitivity for detecting acute appendicitis in adults at a tertiary care centre.

Background

Acute appendicitis is a common surgical emergency (Ref. 1). Although highly user-dependent, ultrasound is a great diagnostic tool given its availability and lack of ionizing radiation (Ref. 2). Increased ultrasound sensitivity should theoretically reduce the number of CTs required to diagnose acute appendicitis.

The Cycle

The Standard

Ultrasound sensitivity for detecting acute appendicitis in adults should be similar to values reported in the literature. A locally agreed standard of 83% is based on a systematic review (Ref. 3) and a meta-analysis (Ref. 4).

Target

83% or greater

Assess local practice

Indicators

Number of true positive versus false negative ultrasound examinations, confirmed at histopathology.

Data items to be collected

Review each surgical appendectomy case (in patients 18 or older) and ensure both the presence of acute appendicitis (from pathologist report) and a pre-operative ultrasound. Then record the radiologist’s interpretation in PACS as either positive or negative (normal, equivocal or unidentified appendix).

Suggested number

3 consecutive years per site, so a trend can be observed.

Suggestions for change if target not met

- Present results to radiologists and sonographers.
- Coordinate with the Emergency Department the administration of analgesics with the timing of the ultrasound appointment. Educate ER staff on the importance of graded compression and how painful this can be for the patient.
- Begin the scan in the RLQ so analgesics have not worn off and full graded compression can be employed. Beginning in the RLQ will ensure enough time and attention is given to interrogating the appendix.
- Consider endovaginal scanning if unsuccessful.
- Second look ultrasound by a more experienced sonographer/radiologist and have the first sonographer reproduce the findings for optimal learning and skills development.

Resources

Data was collected via the hospital surgical database and the PACS system.
Descriptive data analysis was provided by the Radiology Department statistician.
Time required to complete Stages 1-4 of audit cycle: 15 hours

References

1. Addiss DG, Shaffer N, Fowler BS, Tauxe RV. The epidemiology of appendicitis and appendectomy in the United States. Am J Epidemiol. 1990;132(5):910-25.
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3. Al-Khayal KA, Al-Omran MA. Computed tomography and ultrasonography in the diagnosis of equivocal acute appendicitis. A meta-analysis. Saudi Med J. 2007;28(2):173–180.
4. Doria AS, Moineddin R, Kellenberger CJ, et al. US or CT for Diagnosis of Appendicitis in Children and Adults? A Meta Analysis. Radiology. 2006;241(1):83–94.

Submitted by

Joanne M. Howey, BSc, MD
Diagnostic Radiology, PGY-4
McMaster University,
Hamilton, ON

Co Authors

Kavita Dhamanaskar, DMRD, DNB, FRCP(C)
McMaster University,
Hamilton, ON
