

**Presenter:** Hina Arif, M.D.

**Title of Abstract:** **Diagnostic performance of noncontrast abdominopelvic MRI for the evaluation of suspected acute appendicitis in patients < 40 years old.**

**Institution:** University of Arizona

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**Modality:** Multi

**Organ System:** GI

**Intro:** CT is currently accepted as the gold-standard imaging modality for adults with suspected acute appendicitis. However, concerns regarding significant iatrogenic radiation exposure from CT raise concern among physicians and patients over the wide-spread use of this imaging modality. Recent advances have made MRI an attractive, non-radiation alternative to CT for evaluation of abdominal complaints such as acute appendicitis.

**Purpose:** Evaluate the sensitivity and specificity of MRI for detection of acute appendicitis in patients  $\leq$  40 years old presenting to the ED with right lower quadrant pain.

**Methods Used:** Study was IRB-approved. 59 patients  $\leq$  40 years old presenting to the ED with possible acute appendicitis were evaluated with MRI as the primary imaging test between 8-2012 and 3-2013. All MR exams were performed with a fast no oral/no IV contrast protocol utilizing multiplanar non-breath-hold, T2-weighted HASTE sequences without and with spectral adiabatic inversion recovery (SPAIR) fat suppression. MRIs were interpreted the same day in a prospective fashion by the radiologist assigned to the clinical service. Results were classified as a) positive, b) negative or c) indeterminate for acute appendicitis. MRI results were also categorized for additional pathology or sources of pain. Each patient was followed up by a) surgical findings or b) phone call follow-up at 1 week and 6 months after the ED visit with interrogation of medical records for subsequent clinical work-up.

**Results of Abstract:** 59 patients received MRI for evaluation of right lower quadrant pain and 5 exams were positive for acute appendicitis (8.5%). When compared with gold standards of surgery (5/59) and phone call follow-up with medical records review (54/59), MRI demonstrated a sensitivity of 100%, specificity of 100%, negative predictive value of 100% and positive predictive value of 100%. An alternate diagnosis was offered in 22 of 54 cases (40.7%) where MRI was negative for acute appendicitis. The average exam time for each MRI was 15 minutes (range 12-22 minutes).

**Discussion:** MRI is a highly accurate test for the diagnosis of acute appendicitis in patients  $\leq$  40 years old, with sensitivity and specificity of 100% in our study, utilizing a rapid imaging protocol without oral or IV contrast.

**Scientific and/or Clinical Significance?** MRI is a highly accurate test for the diagnosis of acute appendicitis in patients  $\leq$  40 years old, providing an alternate, rapid, non-radiation based exam for the evaluation of right lower quadrant pain in the emergency setting.

**Relationship to existing work** Demonstrates that a rapid, non-contrast MRI protocol is highly accurate for diagnosis of acute appendicitis in patients  $\leq$  40 years old.