

SCIENTIFIC SESSION III (CONT.)

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REDUCING CT SCANS FOR APPENDICITIS BY INCREASING THE DIAGNOSTIC ACCURACY OF ULTRASONOGRAPHY

Jason W. Nielsen, MD¹, Laura Boomer, MD¹, Kelli Kurtovic, BS¹, Ryan Mallory, BA², Eric Lee, MD¹, Brent Adler, MD¹, Greg Bates, MD¹, Jennifer Cooper, PhD¹, Brian Kenney, MD¹.

¹Nationwide Children's Hospital, Columbus, OH, USA, ²Ohio State University College of Medicine, Columbus, OH, USA.

Purpose:

CT scans for appendicitis lead to increased cost and radiation exposure, whereas ultrasounds are often inconclusive and fail to visualize the appendix. In order to reduce the use of CT scans, we implemented a standardized ultrasound report based on validated signs of appendicitis to improve its diagnostic utility.

Methods:

As part of a quality improvement effort, we introduced a standardized ultrasound report in September 2012. Patients were definitively classified into four categories: 1. Normal appendix; 2. Appendix not fully visualized without secondary signs; 3. Appendix not fully visualized with secondary signs; 4. Appendicitis. Category 1 and 2 reports were considered negative for appendicitis; Category 3 and 4 reports were considered positive. Outcomes for patients undergoing ultrasound or CT scan for appendicitis between 9/1/2012 -7/7/2013 (Period B, n=1307) were compared to the 3 months prior to the standardized report (Period A, n=278). Data were analyzed using chi-square or Fisher's exact tests with a significance level of $p < 0.05$.

Results:

In Period A, 76 of 278 (27.3%) patients had appendicitis versus 264 of 1307 (20.2%) in Period B. Patients per category in Period B were: Category 1 n=494, Category 2 n=550, Category 3 n=46, Category 4 n=214, and inconclusive n=3. Inconclusive exams decreased from 47.8% to 0.23% ($p < 0.001$). Ultrasound sensitivity improved from 68.4% to 92.4% ($p < 0.001$); specificity did not significantly change (97.0% to 98.3%, $p = 0.26$). Negative predictive values of Category 1 and 2 reports were 96.7% and 99.6%. CT utilization for appendicitis decreased from 43% in Period A to 21.7% in the second half of Period B ($p < 0.001$).

Conclusions:

Implementation of a standardized ultrasound report with definitive category selection based on validated secondary signs of appendicitis nearly eliminated inconclusive exams, improved diagnostic accuracy even when the appendix was not fully visualized, and resulted in decreased use of CT scans.