

A novel Appendicitis TriMOdal prediction Score (ATMOS) for acute appendicitis in pregnancy: a retrospective observational study.

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ABSTRACT

Several scoring systems exist for the management of acute appendicitis (AA) during pregnancy. However, the systems are based on the nonpregnant adult population. The aim of this study was to create a highly accurate scoring system that can be applied to pregnant women and to compare it to the most commonly used scores in general population and pregnant women. The creation and subsequent implementation of a highly accurate score system could shorten the diagnostic period and minimize the use of (ionizing) diagnostic imaging allowing the selection of the best treatment approach in pregnant patients with acute appendicitis. A single-center, retrospective cohort observational study was conducted at the University Hospital Centre Zagreb, Zagreb, Croatia. Data were extracted from medical records of pregnant patients with suspected AA from January 2010 to December 2020. A total of 59 pregnant patients diagnosed with AA during pregnancy were identified, 41 were treated surgically, and 18 had non-surgical management. The main objective of our study was the detection of predictive factors of AA during pregnancy. Anorexia, pain migration to the right lower quadrant, rebound pain, axillary temperature over 37.3 °C, CRP/platelet ratio > 0.0422, neutrophil/lymphocyte ratio > 7.182, and ultrasonic signs of AA were scored. Scoring in Appendicitis TriMOdal Score (ATMOS) consists of positive clinical parameter, each bringing 1 point and other parameters mentioned above that bring 2 points each. The score ranges from 0 to 10. Our model of ATMOS yields a high area under the receiver-operating characteristic curve of 0.963. The positive likelihood ratio is 9.97 (95% CI 2.64-38.00), and the negative likelihood ratio is 0.1 (95% CI 0.03-0.31), meaning that 94% of cases with ATMOS > 4 have AA, while less than 13% with an ATMOS ≤ 4 have the diagnosis of AA. The potential of ATMOS differentiating AA during pregnancy was demonstrated. Future prospective, randomized trials are needed to evaluate its accuracy and whether it should be used instead of Alvarado or Tzanakis scores in clinical decision-making. Trial registration number ClinicalTrials.gov-NCT05202483. Date of registration: January 21, 2022.