

Abstract

Aim: Appendicitis can be classified into two different entities: simple and complex. Both entities may require their own treatment strategy. However pre-treatment differentiation remains difficult. Therefore, we performed a scoping and systematic review to assess potential biomarkers to determine the severity of appendicitis, and especially both entities.

Methods: A literature search in Pubmed (Medline), EMBASE and the Cochrane Library was conducted following the PRISMA statement (untill November 21st and 29th, 2017). Eligible for inclusion were randomised controlled trials (RCTs), prospective and historical cohort studies published in the year 2000 and later, investigating biomarkers differentiating in the severity of acute appendicitis in children (<18 years). Quality of evidence was assessed using the QUADAS-2 tool. Our primary outcome was an overview of all available biomarkers. Secondary outcomes were positive and negative likelihood ratio, sensitivity, specificity and diagnostic accuracy.

Main results: In total, 6286 articles were screened on title and abstract of which 275 remained for full text assessment. Overall large heterogeneity was reported in terms of used definitions. Thirty-three articles were included, with forty-seven serum and twelve urinary, and two biomarkers in faeces. Secondary outcomes were demonstrated for nineteen biomarkers. Promising, but scarce, results were shown for D-Dimer, Interleukin-6, serum procalcitonin, urinary nitrate and faecal lactoferrin .

Conclusion: In addition to commonly used C-reactive protein and White Blood Cell count, promising biomarkers were reported to differentiate in the severity of appendicitis, especially between simple and complex appendicitis. Nevertheless, uniformity of definitions is necessitated to aid future research and potential implementation.

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