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Critically Appraised Articles

There is insufficient evidence to consider non-operative treatment of uncomplicated acute appendicitis

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English key words: appendicitis, antibiotics, appendectomy, children.

Palabras clave en español: apendicitis, antibióticos, apendicetomía, niños.

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There is insufficient evidence to consider non-operative treatment of uncomplicated acute appendicitis

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Abstract

Authors' conclusions: this study highlights the lack of robust evidence comparing Non-operative treatment for acute uncomplicated appendicitis with appendectomy but provides data that support and justify ongoing and future endeavours.

Reviewers' commentary: there is still insufficient evidence to consider non-operative treatment of acute appendicitis in routine practice.

Key words: appendicitis, antibiotics, appendectomy, children.

Tratamiento con antibióticos de la apendicitis aguda no complicada: aún en fase experimental

Resumen

Conclusiones de los autores del estudio: este estudio pone de relieve la falta de evidencia sobre el tratamiento no quirúrgico de la apendicitis aguda sin complicaciones respecto a la apendicectomía, pero proporciona datos que apoyan y justifican la realización de nuevos estudios sobre el tema.

Comentario de los revisores: se carece aún de evidencia suficiente como para considerar el tratamiento no operatorio de la apendicitis aguda en la práctica habitual.

Palabras clave: apendicitis, antibióticos, apendicetomía, niños.

STRUCTURED ABSTRACT

Objective: to compare non-operative treatment (NOT) with antibiotics of acute uncomplicated appendicitis (AUA) in children as an alternative to appendectomy (AP).

Design: systematic review with meta-analysis.

Data sources: the authors searched the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE and Embase databases in December 2015. They used the search terms "nonoperative" "non-operative", "conservative", "appendicitis", "child" and "children". Language was restricted to English. They excluded studies that were unpublished or published only in abstract form. The authors also reviewed the references of included articles.

Study selection: the review included all types of studies. The exclusion criteria were: complicated appendicitis, studies of adults and children, and studies of children with malignancies. The authors used the Jadad scale to assess the quality of one randomised controlled trial and the methodological index for nonrandomized studies (MINORS) for nonrandomised studies. A total of 10 studies were included; 7 were prospective and 3 retrospective, 6 were comparative and only 1 was randomised (pilot study).

Data extraction: two reviewers extracted the data independently and differences were resolved by consensus. The primary outcome was discharge from hospital without appendectomy during the initial episode. The authors performed one-sided and two-sided meta-analyses using the random effects model. The study did not include a sensitivity analysis.

Main results: 413 children received NOT, which was efficacious in 97% (95% confidence interval [IC 95], 95.5 to 98.7) with a low index of heterogeneity (I^2 , 0%) during the initial admission. The duration of followup ranged between 2 and 54 months, and 14% of patients (95 CI, 7 to 21; I^2 , 80%) required AP for recurrent appendicitis. The long-term efficacy of NOT was 82% (95 CI, 77 to 87; I^2 , 34%). The length of stay (4 studies) was half a day longer in PA patients (95 CI, 0.2 to 0.8; I^2 , 54%). The length of stay including recurrent episodes was 1.1 shorter in patients that underwent AP (95 CI, -1.2 to 3.5; two studies; I^2 , 93%), and the risk of complications (five studies; I^2 , 0%) was similar in both groups.

Conclusion: this study shows that the evidence currently available does not support NOT in place of AP in patients with AUA. For the time being, it is recommended that NOT only be offered to children included in carefully designed research studies, which are currently justified.

Conflicts of interest: the authors disclosed no conflicts of interest.

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COMMENTARY

Justification: acute appendicitis is the most common surgical emergency in the United States. Due to the high probability and unpredictability of perforation during the course of the inflammatory process, surgical treatment at the earliest opportunity has been recommended for over 100 years. At present, the morbidity and mortality caused by appendicitis have dropped drastically, which has led some researchers to review the natural history of the disease and consider medical approaches to its cure.¹⁻³

Scientific rigour or validity: this meta-analysis included prospective and retrospective nonrandomised cohort studies (seven and three, respectively), only 6 of the 10 were comparative studies, and there was only one, small-sized unmasked randomised clinical trial (pilot study), which together resulted in a moderately-sized sample of patients subjected to variable selection criteria, diagnostic procedures and anti-biotherapy regimens. There was significant heterogeneity in the duration of followup established to define recurrence, which is a key element in the assessment of efficacy. In short, it is a meta-analysis of which some data may be questionable and whose results do not allow for robust conclusions, especially since it reports no serious adverse events ($n = 0$), such

as perforation, when their expected frequency would range between 0 and 7 cases per 1000 patients,⁴ which would not justify changing current procedure, as the authors themselves acknowledge.

Clinical relevance: of the 396 children initially managed with NOT, 68 developed recurrent appendicitis during the followup. Another 11 underwent appendectomy for other reasons. By the end of followup, the efficacy of NOT was 82%.

During the follow-up period (which ranged from 2 to 54 months in different studies) 14% of patients had recurrent appendicitis. Another meta-analysis on this subject⁵ was published recently that included only randomised and prospective controlled clinical trials. It selected five articles (3 of which were also included in the review under consideration). The authors found a lower success rate (90.5%), a high failure rate of NOT in patients with appendicolith (tenfold risk), a substantially greater recurrence rate in the one-year followup (26.8%), and also found no significant differences in the incidence of complications.

Applicability to clinical practice: the evidence currently available is insufficient to consider non-operative treatment of acute appendicitis in everyday clinical practice. Further and well-designed studies on NOT are required, especially on its safety, as it seems to be efficacious and in view of the advantages of non-operative treatment for patients.

Conflicts of interest: the authors of the commentary have no conflicts of interest to declare.

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