MANAGEMENT OF UNCOMPLICATED ACUTE APPENDICITIS IN CHILDREN: REVIEW OF EVIDENCE PUBLISHED IN 2017-2018

MANUSEIO DE APENDICITE AGUDA NÃO COMPLICADA EM CRIANÇAS: REVISÃO DA EVIDÊNCIA PUBLICADA EM 2017-2018

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ABSTRACT

Objective: To review and disseminate evidence from 2017 and 2018 on the use of nonoperative treatment for children with uncomplicated acute appendicitis. **Methods:** A literature search for 2017 and 2018 was performed using the following descriptors: uncomplicated acute appendicitis, children, pediatric appendicitis, management, medical treatment, clinical treatment, antibiotic treatment, nonoperative treatment, surgical treatment, and appendectomy. Randomized controlled trials were prioritized. **Results:** Nonoperative treatment for uncomplicated acute appendicitis in children presents similar outcomes for length of hospital stay, duration of antibiotic, pain intensity and duration, and perioperative complication rates; however, it may lead to higher rates of readmissions undetected diseases compared to surgical treatment. Nonetheless, this approach reduces the rate of negative appendectomy and sick leave days, speeds the return to school and daily activities, and reduce hospital costs and risk of long-term complications. **Conclusion:** Antibiotic therapy is a safe first-line option for children with uncomplicated acute appendicitis, and randomized controlled trial should be performed in tertiary hospitals in Brazil. Patients requiring future appendectomy do not experience significant complications. A multicenter Brazilian trial comparing antibiotic therapy with appendectomy, including outpatient treatment, should be conducted to assess the efficacy and safety of this strategy.

Keywords: Uncomplicated acute appendicitis; Children; Medical treatment; Antibiotics treatment; Appendectomy.

RESUMO

Objetivo: Revisar a evidência existente em 2017-2018 e divulgar informações, com base científica sólida, no que se refere ao tratamento clínico para crianças com apendicite aguda sem complicações. **Métodos:** Foi realizada pesquisa de literatura para os anos 2017/2018 utilizando os seguintes descritores: apendicite aguda sem complicações, crianças, apendicite pediátrica, tratamento, tratamento médico, tratamento clínico, tratamento com antibiótico, tratamento não cirúrgico e tratamento cirúrgico, apendicectomia. Os ensaios controlados randomizados constituíram a melhor fonte de informação. **Resultados:** Na literatura revisada, pode-se dizer que a abordagem clínica para a apendicite aguda sem complicações em crianças apresenta resultados semelhantes quanto a permanência hospitalar, dias de antibioticoterapia, menor intensidade e duração da dor e taxas de complicações primárias perioperatórias, podendo haver mais readmissões para pacientes internados e outras doenças concomitantes quando comparadas com o tratamento cirúrgico. No entanto, esta nova abordagem (tratamento clínico) reduz a taxa de apendicectomia negativa, abrevia o tempo de licença por doença e cuidados médicos, promove o retorno mais breve da criança à escola e outras atividades normais, diminui o custo hospitalar e complicações à longo prazo. **Conclusão:** O tratamento com antibióticos isoladamente parece ser terapia segura de primeira linha em crianças selecionadas com apendicite aguda sem complicações e merece estudo randomizado controlado em hospitais terciários no Brasil. Aqueles pacientes que necessitarem de apendicectomia no futuro não apresentarão complicações significativas. Estudo multicêntrico brasileiro que compare o tratamento inicial com antibióticos versus apendicectomia, incluindo abordagem ao nível ambulatorial, deverá ser realizado para avaliar a eficácia e a segurança desta nova abordagem.

Palavras-chave: Apendicite aguda não complicada; Criança; Tratamento médico; Tratamento com antibióticos; Apendicectomia.

INTRODUCTION

Nonoperative treatment for appendicitis has a success rate exceeding 85%, with supporting evidence emerging over the past decade. In such cases, cost-effectiveness supports the clinical approach, as the length of hospital stay is comparable to that of surgical treatment, and complications are generally fewer. However, recurrence of appendicitis occurs in approximately 4% to 20% of patients at long-term follow-up. Overall failure of nonoperative treatment, including early failure and recurrence, occurred more frequently among patients with appendicoliths than without appendicoliths and in those with misdiagnosis of uncomplicated appendicitis. A normal appendix is found in approximately 15% of children undergoing surgery. Patient satisfaction is slightly higher with surgical treatment1-15. Early appendectomy is more cost-effective among children with perforated appendicitis[16].

Currently, laparoscopic appendectomy remains the preferred choice among pediatric surgeons[17,18]. This procedure can be performed safely in adults, even on an outpatient treatment, making it more attractive than seeking what remains a hypothetical treatment approach in tertiary hospitals of developed countries[18-20].

Despite evidence supporting the feasibility of a randomized controlled trial, already conducted in some countries[7,18,19], pediatric surgeons in Brazil are reluctant to offer antibiotic therapy for children with uncomplicated acute appendicitis, even in selected cases, when proposing options to parents. The choice for antibiotics and a critical analysis of the cost-benefit can be barriers to changing the traditional paradigm[21]. Thus, this study aimed to review and disseminate the evidence on the use of nonoperative treatment for children with appendicitis.

METHODS

A literature search covering the years 2017 and 2018 was performed using the following descriptors: uncomplicated acute appendicitis, children, pediatric appendicitis, management, medical treatment, clinical treatment, antibiotics treatment, nonoperative treatment, surgical treatment, and appendectomy. Inclusion criteria were randomized controlled trials and cohort studies involving children treated nonoperatively for uncomplicated appendicitis, with a minimum follow-up of one year. Two authors independently extracted data and assessed quality. Primary outcome was the percentage of children experiencing complications after treatment. Secondary outcomes were early failures, recurrent appendicitis and appendectomies, and length of hospital stay. The null hypothesis was that clinical outcomes, length of hospital stay, and hospital readmission rates would be unchanged after clinical and surgical treatments.

RESULTS

Twenty-two studies were included. Regarding perioperative outcomes, survival rates and major complications were similar between surgical and nonoperative treatments. Length of hospital stay was longer in the antibiotic therapy compared with surgical treatment; however, this had been predefined in the protocols to allow closer monitoring of children and ensure patient safety. Since none of the children initially treated with antibiotics who later required appendectomy experienced serious complications, the length of hospital stay related to antibiotic therapy may be reduced. A disadvantage of antibiotic therapy for acute appendicitis is the possible bias introduced by spontaneously resolved cases of appendicitis in children.

Decreased hospital charges were observed in children with uncomplicated acute appendicitis who received only antibiotics[19].

Same-day discharge for uncomplicated appendicitis was safe and feasible with laparoscopy, with the potential for significant healthcare cost savings[21].

DISCUSSION

Robust evidence supports antibiotics over surgery for treating children with uncomplicated acute appendicitis. Although non-inferiority of antibiotic therapy over appendectomy was demonstrated, approximately 75% of children with uncomplicated acute appendicitis can be successfully treated with only antibiotics. Moreover, long-term side effects of this approach are significantly lower than surgery. On the other hand, intraluminal appendicoliths may predict failure of nonoperative treatment and progression to complicated acute appendicitis in children and adults.

Appropriate clinical practice, along with adequate laboratory and ultrasound examinations for

children with suspected acute appendicitis, can improve patient care by reducing unnecessary surgery and promoting more efficient use of hospital resources. These are important outcomes for developing countries such as Brazil.

For successful antibiotic therapy, it must provide broad coverage against all potential pathogens causing appendicitis. To overcome this limitation, agents such as ertapenem, ceftriaxone combined with metronidazole, or cefoxitin offer broad spectrum activity and advantage of once daily dosing, making them effective options for serious intra-abdominal infections, including appendicitis[20]. Future studies on antibiotic therapy for appendicitis should demonstrate efficacy while employing agents with a narrower antibacterial spectrum. Currently, ceftriaxone plus metronidazole represents a streamlined and cost-effective regimen for the treatment of non -perforated, perforated, and abscessed appendicitis in children.

Relapses can occur during life, which supports early surgical intervention to prevent complications and unnecessary costs. However, our hypothesis was that most children treated with only antibiotics would not experience recurrence in the following years.

Data interpretation is crucial in this type of review. For example, the one-year recurrence rate of appendicitis after antibiotic therapy was reported as 22.6%, which is a compelling finding. Additionally, the risk of undetected diseases in this group is a concern[15].

Overall, nonoperative treatment for uncomplicated acute appendicitis in children yields similar outcomes in terms of length of hospital stay, duration of antibiotics, pain intensity and duration, and perioperative complication rates. However, this strategy may be associated with higher rates of readmissions and undetected diagnoses. Nonetheless, this approach reduces the rate of negative appendectomy and sick leave days, speeds the return to school and daily activities, and reduces hospital costs and long-term complications[8]. Double-blind randomized controlled trials are needed to differentiate these effects[22].

If a surgical resident trainee is asked about the best option for treating children with uncomplicated acute appendicitis, the unquestionable answer would be surgical treatment combined with perioperative antibiotics[11]. This view is also shared by most pediatric surgeons in Brazil.

This review complements the literature on the comparison between antibiotic therapy and surgical treatment for uncomplicated acute appendicitis in children, emphasizing the need for unbiased interpretations and proper use of available evidence.

Finally, pediatric surgeons must determine the best strategy for each patient with uncomplicated acute appendicitis, using evidence, clinical judgment, and available resources. The decision should prioritize patient safety and incorporate shared decision-making between surgeon, patient, and family[14].

CONCLUSION

Antibiotic therapy is a safe first-line option for children with uncomplicated acute appendicitis, and randomized controlled trials in tertiary hospitals in Brazil should be implemented. Patients requiring future appendectomy generally do not experience significant complications. A multicenter Brazilian trial comparing antibiotic therapy with appendectomy, including outpatient management, is feasible to assess the efficacy and safety of this strategy.

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