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## Original Article

# Correlation of clinical data and the Alvarado's Score as predictors of acute appendicitis<sup>☆</sup>

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### ABSTRACT

**Objective:** To correlate the patient's clinical data and the Alvarado's Score as predictors of acute appendicitis.

**Methods:** This is an observational, descriptive and prospective study performed at a public urgency and emergency hospital in the city of Fortaleza, Ceará, between July and December 2016, with 34 patients undergoing open appendectomy with ages between 18 and 70 years. Statistical analysis was performed using the SPSS program.

**Results:** The following statistical correlations were performed: number of days with abdominal pain until the operative event and degree of inflammation according to a macroscopic analysis of the appendix, Alvarado's Score and number of days with abdominal pain until the operative event, Alvarado's Score and degree of inflammation according to a macroscopic analysis of the appendix, number of days with abdominal pain until the operative event, and number of days of hospitalization in the postoperative period, degree of inflammation according to a macroscopic analysis of the appendix, number of days of hospitalization in the postoperative period and Alvarado's Score, and number of days of hospitalization in the postoperative period; the first five correlations were statistically significant ( $p < 0.05$ ).

**Conclusion:** The use of this Alvarado's Score in health services emerges as a tool for the diagnosis of acute appendicitis.

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## Correlação de dados clínicos e a escala de Alvarado como preditores da apendicite aguda

### R E S U M O

**Palavras-chave:**  
Apendicite  
Apendicectomia  
Diagnóstico

**Objetivo:** correlacionar os dados clínicos do paciente e a pontuação do Escore de Alvarado como preditores da apendicite aguda.

**Métodos:** Estudo observacional, descritivo e prospectivo realizado em um hospital secundário de urgência e emergência da rede pública na cidade de Fortaleza-Ceará, entre julho a dezembro de 2016, com 34 pacientes submetidos à apendicectomia por via aberta com idade entre 18 e 70 anos. A análise estatística foi realizada utilizando o programa SPSS. **Resultados:** Foram realizadas as seguintes correlações estatísticas: número de dias com dor abdominal até o ato operatório e grau de inflamação segundo análise macroscópica do apêndice, Escore de Alvarado e número de dias com dor abdominal até o ato operatório, Escore de Alvarado e grau de inflamação segundo análise macroscópica do apêndice, número de dias com dor abdominal até o ato operatório e número de dias de internação no pós-operatório, grau de inflamação segundo análise macroscópica do apêndice e número de dias de internação no pós-operatório e Escore de Alvarado e número de dias de internação no pós-operatório, sendo as cinco primeiras estatisticamente significantes ( $p < 0,05$ ).

**Conclusão:** O uso desta escala nos serviços de saúde emerge como uma possibilidade de ferramenta para auxiliar o diagnóstico de apendicite aguda.

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## Introduction

Despite being the most prevalent cause of acute surgical abdomen, the diagnosis of acute appendicitis is hampered by the absence of typical symptoms and of suggestive laboratory data in about 20–33% of the cases.<sup>1</sup> Detection failures can lead to both a negative appendectomy as to complications of the clinical picture.<sup>2,3</sup> In this sense, scoring tests for the diagnosis, such as the Alvarado's Score, can contribute to the early detection of cases of acute appendicitis, reducing individual damage as well as social and material costs.<sup>4–6</sup>

With the association of clinical data to a complete blood count, the Alvarado's Score can be determined (Table 1). With up to 3 points, less than 5% of patients will have acute appendicitis and, in such cases, they can be discharged, with guidelines for their return in case of progression, or for serial clinical exams. With an Alvarado's score of 4–6, a sensitivity of 35% is observed for acute appendicitis; the patient's hospitalization is then indicated for a more detailed investigation, especially in cases of children, the elderly and women of child-bearing age. With 7 or more points, sensitivity rises to 78% in women and to 94% in men, indicating an urgent surgical approach. In the latter group, a little more than 10% of the laparotomies or videolaparoscopies will reveal no alterations in the vermiform appendix.<sup>4–10</sup>

In the case of an early diagnosis, the surgery is usually of simple execution, without significant repercussions in the postoperative period. In cases of late diagnosis, there is usually a development until the occurrence of appendicular perforation and/or necrosis, with a higher prevalence of complications, extensive surgeries, prolonged admissions, and a

more difficult recovery in the postoperative period, with a higher social cost and also with higher costs for the health system.<sup>11–14</sup>

In view of this, our study sought to correlate the patient's clinical data and the results of the Alvarado's Score as predictors of acute appendicitis, which can be used in emergency care for the early detection of this problem.

## Method

### Study design and data collection

This is a prospective, observational, and descriptive study, performed at a secondary emergency and emergency hospital in the city of Fortaleza, Ceará. During the period from July to December 2016, 34 patients aged 18–70 years and submitted to open appendectomy were evaluated. According to resolution 510/2016, sociodemographic data, the Alvarado's Score (Table 1), the number of days with abdominal pain until the surgery, the degree of inflammation according to the macroscopic analysis of the appendix (Table 2), and the number of days of hospitalization in the postoperative period were collected. It was assumed that there is a correlation between the Alvarado's Score and the macroscopic analysis of the appendix (Table 3).

### Variables studied

As a primary variable, the Alvarado's Score was used. The secondary variables were macroscopic analysis of the appendix, number of days of abdominal pain, and days of hospitalization in the postoperative period.

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