Research Article

Effectiveness of the Paediatric Appendicitis Score for Diagnosing the Severity of Acute Appendicitis in Children: A Cohort Study

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Background: The Pediatric Appendicitis Score (PAS) was designed and validated to distinguish acute appendicitis from non-surgical abdominal pain, but not to differentiate between simple and complicated appendicitis. It is important to clarify that our intention is not to challenge the original purpose of the Pediatric Appendicitis Score (PAS), which was developed to support the diagnosis of appendicitis in children. Instead, our study evaluated the potential utility of a PAS score ≥8 in distinguishing between simple appendicitis (congestive or suppurative) and complicated appendicitis (gangrenous or perforated) in pediatric patients.

Methods: The cohort type study, the population evaluated, 86 children aged 4 to 14 years with preoperative diagnosis of appendicitis, grouped into 2 groups: complicated appendicitis (43) and simple appendicitis (43) exposed to PAS≥8 or PAS˂8.

Results: The effectiveness of PAS≥8 in diagnosing the severity of appendicitis showed an AUC of 59.3% and increases the probability of severity by 2.246 times (CI:95% 0.917-5.50 p=0.077) in the predictive model. There were statistically significant differences in cough sensitivity/jump/percussion, pain migration, anorexia, leukocytosis and neutrophilia, between PAS≥8 or PAS˂8.

Conclusion: PAS≥8 alone is not sufficient to diagnose the severity of acute appendicitis with 59.3% predictive diagnostic accuracy and increases 2.246 times the probability of presenting with the severity of appendicitis in the logistic predictive model.

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Introduction

Acute appendicitis is one of the most frequent causes of acute abdomen in emergency settings. Delayed diagnosis or failure to assess disease severity can lead to complications. Globally, the incidence is estimated at approximately 100 new cases per 100,000 individuals annually.[1]. In the United States, approximately 70,000 pediatric appendectomies are performed annually. Among children aged 5 to 11 years, the incidence of appendicitis reaches 36%, with an average of 1.38 cases per 1,000 children. [2][3].

Diagnosing appendicitis relies on clinical evaluation supported by complementary tests. In pediatric patients, assessing disease severity remains challenging. The use of clinical tools such as the Pediatric Appendicitis Score (PAS) may enhance diagnostic accuracy in emergency settings.

Other emerging studies highlight alternative tools such as the BIDIAP index and the Pediatric Appendicitis Risk Calculator (pARC), which are cost-effective, easy to use, and have demonstrated superior diagnostic performance compared to PAS in emergency settings. [4][5][6]. Additionally, recent studies have shown that biomarkers such as interleukin-6 (IL-6), serum sodium (natremia), bilirubin levels, and coagulation profile can aid in distinguishing between uncomplicated and complicated appendicitis [7][8][9][10]

Recently, the World Society of Emergency Surgery in their Jerusalem Guidelines reached a consensus that the PAS is a useful and sensitive tool to exclude acute appendicitis and recommended not making the diagnosis based solely on clinical in those with suspected pediatric appendicitis[11].

The PAS developed by Madan Samuel is still relevant and applicable today. It consists of 8 parameters, with the main ones being (**T**enderness in the right lower quadrant and cough/hop/percussion **T**enderness) and the other secondary parameters (**M**igration of pain, **A**norexia, **N**ausea/vomiting, **E**levated temperature, **L**eukocytosis, and **N**eutrophilia) **TT/MANELN**, being useful for predicting the risk of pediatric appendicitis[12].

The effectiveness of the PAS for diagnosing the severity of appendicitis is defined as a mechanism to achieve predictive diagnostic accuracy of the PAS≥8 for severity and predictive possibility through the binomial logistic regression model, for the number of correct cases over a period of 1 year and 9 months.

In a study of 72 patients in a hospital in Japan, it suggests that the PAS would have a correlation with the severity of appendicitis because they found with greater complications and prolonged hospital stay than those with PAS˂8[13].

The study aims to evaluate the effectiveness of the PAS≥8 in diagnosing the severity of acute appendicitis in children and as secondary objectives the PAS characteristics with respect to other variables.

Methods

Study type

The type of study of the present research is: Retrospective cohort type.

Participans

The population consists of all patients aged 4 to 14 who are admitted with a diagnosis of acute appendicitis to the emergency department, undergo open appendectomy with intraoperative findings of simple or complicated appendicitis, and are hospitalized in the Pediatric Service from the Carlos Monge Medrano Hospital during 2020 to 2022, which meet selection criteria.

The 86 patients who met the criteria detailed in the inclusion flow, for more details see (results section). He grouped into two groups: First group, of 43 children with Simple Appendicitis (the surgical findings of: Congestive Appendicitis and Suppurative Appendicitis were considered). A second group, consisting of 43 children with Complicated Appendicitis (the surgical findings of Necrotizing Appendicitis and Perforated Appendicitis were considered). Both groups were exposed to PAS≥8 or PAS˂8.

Variables

The severity of appendicitis in the present research is referred to as the differentiation between complicated appendicitis and simple appendicitis based on the intraoperative findings discovered by the surgeon during the open appendectomy.

Simple Appendicitis

It is an early phase appendicitis that includes congestive (catarrhal) appendicitis and suppurative (phlegmonous) appendicitis in the intraoperative findings. This type of appendicitis has not yet reached the stage of complications.

Complicated Appendicitis

It is a perforated appendicitis as a common component in addition to gangrene, pus, purulent peritonitis, presence of a fecalith or abscess[11]. Complicated appendicitis includes: necrotizing (gangrenous) appendicitis, due to the micro perforations observed, and perforated appendicitis found in intraoperative findings, in some cases with: localized peritonitis, generalized peritonitis, and abscesses.

PAS

PAS parameters

Main parameters (**T**enderness in right iliac fossa when coughing/jumping/percussing, manifests during the patient's physical examination; **T**enderness in the right lower quadrant is a symptom that the patient exhibits at the level of the right iliac fossa, most representative in the late stages of appendicitis) and secondary parameters (**M**igration of pain is when abdominal pain changes position from being periumbilical or diffuse to localizing in the right lower quadrant, **A**norexia, it is the decrease in appetite, an early manifestation may or may not be present, **N**ausea/vomiting, it is when the patient expresses a nauseous feeling alone or it may be followed by vomiting, **E**levation of temperature, for this research we consider T≥37.5 Grades Celsius(°C), it is a thermal rise sensation quantified at the axillary level, **L**eukocytosis is the value above >10,000/μL of leukocytes, a range that exceeds normal, **N**eutrophilia is considered an absolute neutrophil count value >7.5 000/μ.).

PAS≥8

The PAS≥8 and PAS<8 were evaluated upon admission to the emergency room and follow-up was conducted because all were exposed to various PAS scores. Additionally, regarding its severity, the severity variable in emergency simple appendicitis vs complicated appendicitis was also evaluated, and after the surgical finding, simple appendicitis vs complicated appendicitis was also verified.

Procedures

The following database was used: hospitalization registry and statistical database with ICD 10 acute appendicitis K35.9, then a single database was created to help register the surgical report located in the surgical center, records and pediatric hospitalization registry notebook. The final database did not include the names of the patients or their national identification numbers.

The period of recruitment and data collection was during November 11, 2022 to December 27, 2022, the exposure and follow-up of the variables, including PAS≥8, was analyzed during 2020 to 2022.

Data analysis

The statistical software Excel was used to analyze the database without selection criteria and another with selection criteria, and then it was processed in the statistical software Jamovi 2.3.28 [14].

Descriptive statistics were used for: frequencies, means, SD, medians, minimums, and maximums for the analysis of the variables. Additionally, binomial logistic regression was used for predictive diagnostic accuracy of severity (through diagnostic accuracy of the ROC curve (AUC)) and predictive possibility (OR) in the predictive model for the PAS with a 95% CI.

Assisted by ROC curves for sensitivity, specificity, area under the ROC curve, PPV, NPV, and OR measures. The highest Youden index was used to determine the cutoff value of the score on the PAS using the Friesen Plugin, PPDA (ROC Test) for Jamovi.

We used Jamovi, for the present study statistical significance is $p<0.05$.

Ethics

This study was reviewed and approved by the Institutional Ethics Review Board of the Hospital Carlos Monge Medrano (N° 294) Juliaca, Puno, Peru.

It was a secondary data study and there was no contact with the patient, therefore patient consent was not requested. The patient's anonymity and the confidentiality of data such as identity or any other information that could compromise the patient were maintained.

Results

Between January 2020 and September 2022, 86 children were studied at HCMM using a cohort design. Eligibility criteria were applied, with stages of evaluation, inclusion, and exclusion, as well as losses during follow-up, until the process was completed as detailed in “Figure 1”.

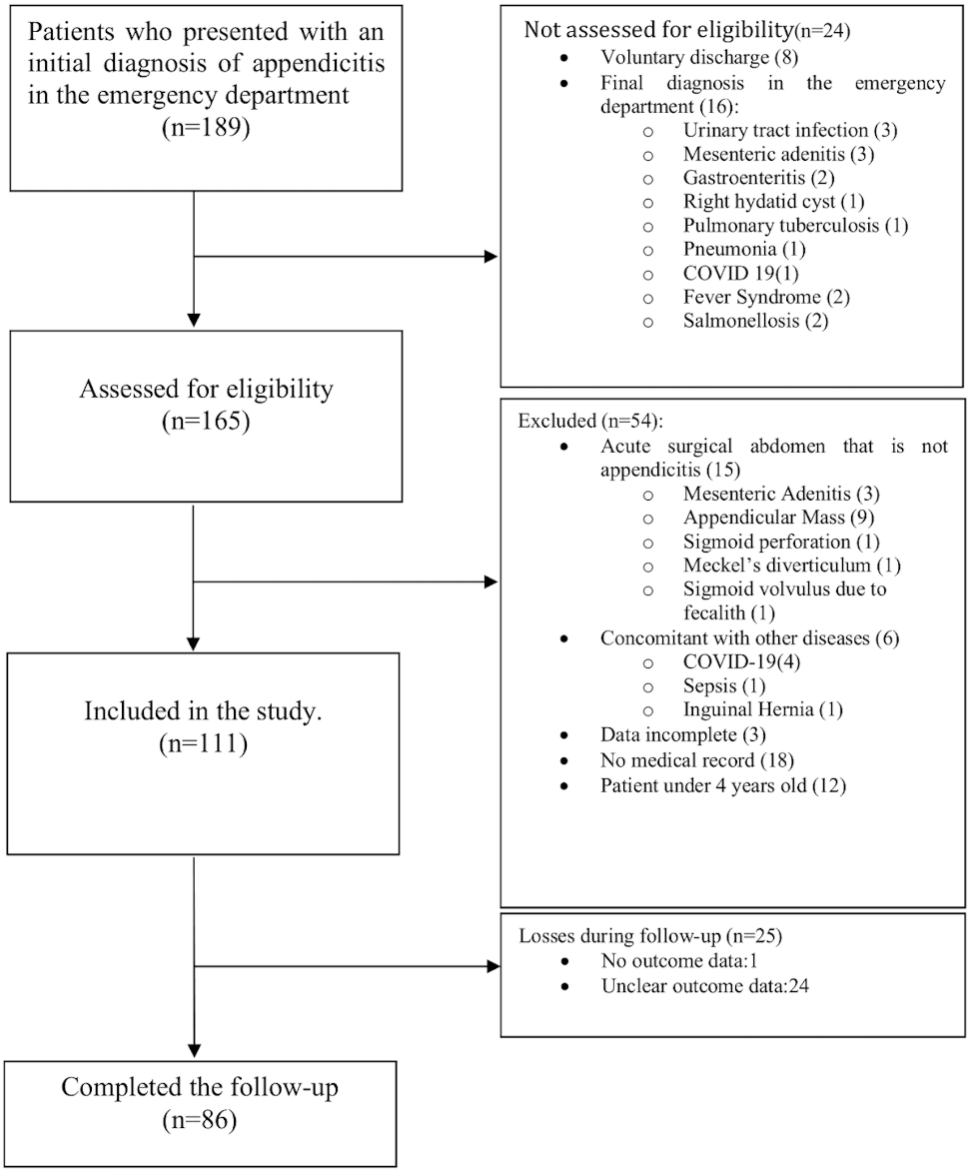

Figure 1. Flow diagram (study selection).

The losses during the follow-up were due to: 1 did not have a report of findings and the remaining 24 had two to three findings of appendicitis (Example: Necrotizing appendicitis + perforated appendicitis or suppurative appendicitis + necrotizing appendicitis + perforated appendicitis/appendiceal abscess).

Characteristics of the participants

The mean age of patients was 9.6 ±3 years, Male 53.5% and similar distribution of rural and urban(p=0.982) in patients with PAS ≥8 and PAS <8. There were statistically significant differences in the cough/hop/percussion Tenderness (100% vs 78.1% p<0.001), migration of pain (77.8% vs 31.3% p<0.001), anorexia (42.6% vs 12.5% p=0.004), leukocytosis (96.3% vs 62.5% p<0.001) and neutrophilia (100% vs 65.6% p<0.001) between PAS≥8 vs PAS<8. Tenderness right lower Quadrant (RLQ) found in almost all patients (98.8% p=0.191) in the mnemotechnic **TT/MANELN** and Appendicitis Complicated were more common in PAS ≥8 compared a PAS <8(57.4% vs 37.5% p=0.074) "Table 1-2".

Parameters		**Score**
Main Parameters	**T**enderness in right lower quadrant	2
	Cough/Hop/Percussion **T**enderness	2
Secondary Parameters	**M**igration of pain	1
	Anorexia	1
	Nausea/vomiting	1
	Elevated temperature	1
	Leukocytosis	1
	Neutrophilia	1

Table 1. PAS (TT/MANELN Mnemotechnic)

Based in: Samuel M. Pediatric appendicitis score. J Pediatr Surg. 2002

	PAS		Total %(n)	p
	PAS≥8 %(n)	PAS <8 % (n)		
Age(years)*			9.6±3	
Sex				
Male	60.9(28)	39.1(18)	53.5(46)	0.693
Female	65.0(26)	35.0(32)	46.5(40)	
Origen				
Rural	68.5(37)	68.8(22)	31.4(27)	0.982
Urban	31.5(17)	31.3(10)	68.6(59)	
Characteristics of Parameters PAS				
Tenderness in RLQ				
Yes	100(54)	96.9(31)	98.8(85)	0.191
No	0.0(0)	3.1(1)	1.2(1)	
Cough/hop/percussion Tenderness				
Yes	100(54)	78.1(25)	91.9(79)	<0.001
No	0.0(0)	21.9(32)	1.2(7)	
Migration of pain				
Yes	77.8(42)	31.3(10)	60.5(52)	<0.001
No	22.2(12)	68.8(22)	39.5(34)	
Anorexia				
Yes	42.6(23)	12.5(4)	31.4(27)	0.004
No	57.4(31)	87.5(28)	68.6(59)	
Nauseas/vomiting				
Yes	96.3(52)	87.5(28)	93.0(80)	0.122
No	3.7(2)	12.5(4)	7.0(6)	

	PAS		Total %(n)	p
	PAS≥8 %(n)	PAS <8 % (n)		
Elevation temperature				
Yes	46.3(25)	28.1(9)	39.5(34)	0.096
No	53.4(29)	71.9(23)	60.5(52)	
Leukocytosis				
Yes	96.3(52)	62.5(20)	83.7(72)	<0.001
No	3.7(2)	37.5(12)	16.3(14)	
Neutrophilia				
Yes	100(54)	65.6(21)	87.2(75)	<0.001
No	0.0(0)	34.4(11)	12.8(11)	
Severity of Appendicitis				
Complicated	57.4(31)	37.5(12)	50.0(43)	0.074
Simple	42.6(23)	62.5(20)	50.0(43	

Table 2. Characteristics of the patients in the study (N=86)

Note: *N: Total number of participants analyzed; *: Mean±Standar deviation; % (n): Percentage (total found); RLQ: Right lower quadrant*

Analysis for the main objective

The effectiveness of the PAS≥8 showed a diagnostic accuracy of 59.3% to predict the severity of appendicitis in the binomial logistic regression model, a cutoff value of 0.5. For the PAS≥8 as a predictor for diagnosing the severity of acute appendicitis, an ROC curve was designed in which the sensitivity was found to be 72.1%, the specificity was 46.5%, and the area under the curve was 0.593 for the model “Figure 2”.

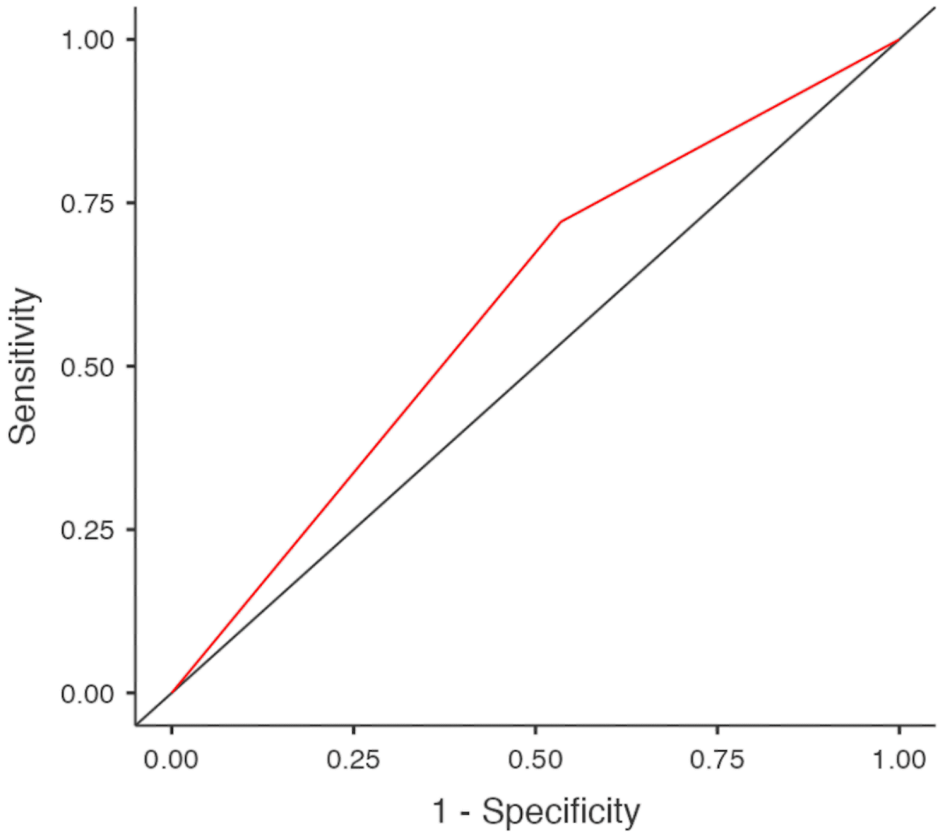

Figure 2. ROC. Curve receiver operating characteristic curves with the corresponding area under the curve (AUC) for PAS scoring system in predicting severity acute appendicitis.

Obtaining a PAS≥8 score increases the likelihood of presenting with severe appendicitis by 2.246 times compared to those with a PAS<8 score (CI: 95% 0.917 to 5.50 p=0.077), a statistically non-significant result, to see “Table 3”.

						95% Confidence Interval	
Predictor	**Estimate**	**SE**	**Z**	**p**	**OR**	**Lower**	**Upper**
Intercept	-0.511	0.365	-1.40	0.162	0.600	0.293	1.23
PAS≥8:							
Si – No	0.809	0.457	1.77	0.077	2.246	0.917	5.50

Table 3. Model Coefficients -Severity of Acute Appendicitis(N=86)

Note. Estimates represent the log odds of "Severity= Complicated Appendicitis " vs. "Severity= Simple Appendicitis "; N: Total number of participants analyzed; OR: ***Odds ratio***

The logistic regression model is employed in clinical studies with the following formula.[15]:

$$\mathrm{Logit}(p_x) = \mathrm{logit}(p_x) = \log\left(\frac{p_x}{1-p_x}\right) = \beta_0 + \beta_1 X_1 + \cdots + \beta_k X_k$$

The formula, to assess the effectiveness of the probability of predicting the effectiveness of the PAS≥8 for diagnosing the severity of appendicitis is:

$$\text{Probability of predicting severity} = -0.511 + 0.809 \times \text{PAS} \geq 8 \; \mathbf{R^2_{McF}} = 0.0269$$

Additional approaches to the treatment of appendicitis include:

Garcia-Amado C. et al. [16]:

$$\begin{gathered}\text{Probability predicting} = \mathrm{t} = -(-9.99 + 0.030\mathrm{xage(years)} \\ + 0.016\mathrm{xduration\ of\ symptoms\ (h)} + 0.084\mathrm{xpercentage\ of\ neutrophils\ (\%)} \\ + 0,008\mathrm{xCRP(mg/L)})\end{gathered}$$

Feng W. et al.[17]:

$$\begin{gathered}\text{Probability predicting} = \mathrm{u} = -(2.997 - 1.559\mathrm{xage(years)} \\ + 0.090\mathrm{x\ white\ blood\ cell\ count\ (WBC)}(10^9/\mathrm{L}) \\ + 0.010\mathrm{xDuration\ of\ symptoms(hours)})\end{gathered}$$

Eddama M. et al.[18]:

$$\text{Probability predicting} = \text{v} = -(-8.814 + 0.364\text{xlog 2 CRP} + 1.768\text{xlog 2 WWC} + 0.025\text{xage} + 0.647\text{x}(0 \text{ if Female}/\ 1 \text{ if Male})$$

Chambers A.C. et al[19]

$$\text{Probability predicting} = \text{w} = -(-2.77 + 0.005\text{xCRP} + 0.061\text{xBilirubin} + 0.211\text{xWCC})$$

Analysis for secondary objectives

In our study, no cases of PAS<5 and we were observed Positive and negative predictive values for each score "Table 4". In the evaluated patients, there were statistically significant: leukocytosis (16.98x10^3/µL ±4.81 vs 13.29x10^3/µL ±5.69 p<0.001), neutrophilia (14.70 x10^3/µL ±4.68 vs 11.06 x10^3/µL ±4.68 p<0.001), PAS score (8.59±0.59 vs 6.38±0.71 p<0.001), between PAS≥8 vs PAS<8 "Table 5".

PAS	Sensitivity (%)	Specificity (%)	PPV (%)	NPV (%)	Youden's índex	AUC	Metric Score
1	0	0	0	0	0	0	0
2	0	0	0	0	0	0	0
3	0	0	0	0	0	0	0
4	0	0	0	0	0	0	0
5	100%	0%	50%	0%	0.00	0.58	1.00
6	90.7%	0%	47.56%	0%	-0.09	0.58	0.90
7	86.05%	23.26%	52.86%	62.5%	0.09	0.58	1.09
8	72.09%	46.51%	57.41%	62.5%	0.19	0.58	1.18
9	37.21%	69.77%	55.17%	52.63%	0.07	0.58	1.07
10	6.98%	100%	100%	51.81%	0.07	0.58	1.07

Table 4. Positive and negative predictive values for each score

Note: PAS: Pediatric Appendicitis Score, PPV: Positive Predictive Value, NPV: Negative Predictive Value; AUC: Receiver Operating Characteristic

	PAS≥8	N	Mean	SD
Hospital Stay	Si	54	6.17	2.081
	No	32	5.81	2.912
Leukocytosis	Si	54	16.98	4.962
x10^3/µL	No	32	13.29	5.693
Neutrophilia	Si	54	14.70	4.678
x10^3/µL	No	32	11.06	5.562
PAS	Si	54	8.59	0.599
	No	32	6.38	0.707
Temperature elevation	Si	54	37.22	0.746
	No	32	37.19	0.898
Segmented neutropils	Si	54	84.80	6.363
	No	32	79.22	10.646
Band neutropils	Si	54	1.38	2.244
	No	32	1.82	2.690

Table 5. Hospital characteristics and PAS≥8

Note: Pediatric Appendicitis Score

We obtained higher percentages in the PAS≥8: duration of illness (24 to 48h 33.7% p=0.025), perforated appendicitis (31.4%p˂0.001), Rockey Davis incision (33.7% p=0.004) and appendicitis with generalized peritonitis (19.8% p˂0.001) all of the above when compared to the PAS˂8 “Table 6”.

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Variables	PAS≥8	%(Total)	p
Duration of illness			0.025
<24h	Yes	5.8% (5)	
	No	5.8% (5)	
24 a 48h	Yes	33.7% (29)	
	No	19.8% (17)	
>48h	Yes	23.3% (20)	
	No	11.6% (10)	
Operative Finding of Appendicitis			<0.001
Congestive	Yes	3.5% (3)	
	No	3.5% (3)	
Suppurative	Yes	9.3% (8)	
	No	9.3%(8)	
Necrotizing	Yes	18.6% (16)	
	No	14.0% (12)	
Perforated	Yes	31.4% (27)	
	No	10.5% (9)	
Incision through the skin			0.004
Rockhy Davis	Yes	33.7% (29)	
	No	25.6% (22)	
IMIU	Yes	22.1% (18)	
	No	8.1% (7)	
IPMIUD	Yes	5.8% (5)	
	No	3.5% (3)	
IMSU	Yes	1.2% (1)	
	No	0.0% (0)	

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Variables	PAS≥8	%(Total)	p
Appendicitis with peritonitis			<0.001
Generalizaded	Yes	19.8% (17)	
	No	9.3% (8)	
Localized	Yes	11.6% (10)	
	No	3.5% (3)	
Without	Yes	31.4% (27)	
	No	24.4% (21)	

Table 6. Characteristics of the duration of duration of illness and operative findings compared with a PAS≥8 (N=86)

PAS=Pediatric Appendicitis Score; %=Percentage; IMIU=Median Infraumbilical Incision; IMPIUD= Right Infraumbilical Paramedian Incision; IMSU= Supraumbilical Median Incision; N: Total number of participants analyzed

Discussion

In the latest update of the Jerusalem Guidelines by the World Society for Emergency Surgery, the PAS is considered one of the most used clinical scoring systems in children[11]. Current scoring systems (PAS, Lintula, Alvarado, MPAS and Tzanakis) help us in the diagnosis of appendicitis and reduce negative appendectomy rates in children at present[20]. Studies support the potential of integrating the systemic immune-inflammation index with the Pediatric Appendicitis Score for assessing disease severity and predicting surgical outcomes in pediatric appendicitis[21].

Our study was to evaluate the effectiveness for diagnosing the severity of acute appendicitis (complicated appendicitis and simple appendicitis) using the PAS≥8.The results of the cut-off value of the PAS score equal to 8 in the PAS to diagnose the severity of appendicitis agree with the study of Fugii et al.[13].

Recent studies on diagnosing complicated appendicitis recognize the usefulness of hyponatremia, direct bilirubin, IL-6, and moderate alterations in the coagulation profile for distinguishing complicated

appendicitis from simple appendicitis[22][23][24].

Several studies compare the PAS with the most well-known adult scoring system, the Alvarado score, for the diagnosis of appendicitis in children [25][26][27]. The usefulness of both the PAS and Alvarado scores helps in early diagnosis and reduces the rates of negative appendectomy [28][29].However, other studies compare PAS with scores such as RIPASA [30][31].

PAS, in conjunction with symptom duration, may assist in predicting patients with a higher likelihood of developing a postoperative intraabdominal abscess[32].PAS≥8 only was not effective, for diagnosing complicated appendicitis.In our study, no cases of PAS<5 were observed; we agree with another study that did not observe PAS<4[33].

Other useful tools for diagnosing appendicitis used in community emergency departments include pARC, which outperformed the PAS by accurately assessing the risk of appendicitis in children aged 5 years and older.[34]. Recent studies show that the BIDIAP index is an easy-to-use and cost-effective diagnostic tool[35].

A study in a hospital, analyzed in 161 children three predictors: the PAS≥8, CRP>4mg/dl and symptom duration>1day for complicated appendicitis, they designed a ROC curve for the three predictors obtaining: an area under the curve 0.91, sensitivity of 51%, specificity of 99%, PPV of 83% and NPV of 66%, different from our study that only analyzed one predictor which was the PAS≥8 [36].Higher CRP levels and PAS were associated with increased histologic inflammation of the appendix[37].

Currently, scoring systems based on NLR(NLR: neutrophil-to-lymphocyte ratio), PLR(platelet-to-lymphocyte ratio), and LMR(lymphocyte-to-monocyte ratio) reference values vary according to age and gender[38]. New regression analyses could include the PAS to distinguish complicated appendicitis and simple appendicitis in children. As a scoring system called POPs, which combines inflammatory predictors, ultrasound findings[39]. The clinical prediction rules, which combine clinical and objective variables, had the highest discriminant capacity[40].

In addition, another study of 260 children evaluated the performance of the PAS and found an area under the curve of 0.992, sensitivity of 98.74%, specificity of 95.65%, PPV of 95.7%, and NPV of 96.65% for a PAS≥6[41]. In 104 children studied, sensitivity of 96.8%, specificity of 80%, PPV of 98.91%, NPV of 57.14% and area under the curve of 0.84[42]. Both studies contradict ours because they are for the diagnosis of appendicitis but not for the severity of acute appendicitis.

The most accurate predictors of appendicitis (both simple and perforated) were rebound tenderness, hop/cough tenderness, laboratory results, and ultrasound findings, as demonstrated in a study of multi-center cohorts[43]. Pediatric predictors could include neutrophilia, leukocytosis, pain upon cough/hop/percussion. The accuracy of PAS may vary depending on the pediatric age group[44]. In children presenting with nonspecific acute abdominal pain, age is a factor to consider when assessing the diagnostic value of PAS [45].

Tenderness, migration of pain, anorexia, as they are significant in the present investigation or the PAS≥8 to be evaluated alongside other predictive models. In another study PAS score ≥ 7 is associated with prolonged hospital stay[46].

A study of 1141 children showed that delaying appendectomy within 24h after the onset of appendicitis is safe and feasible[47]. The duration of illness between 24 and 48 hours is associated with a PAS≥8.

This study has limitations inherent to its retrospective design, which precludes ensuring statistical validity and limits the accurate assessment of PAS performance. Histopathological findings were not included, as the hospital lacked this data during the study period; only intraoperative findings were available. Similarly, ultrasound data were not analyzed, although their inclusion would have been of interest.

Another significant limitation of the study is the sample size, which may have introduced a beta error. We recommend that future predictive studies be conducted in larger populations, with prior sample size estimation based on the area under the curve (AUC), to allow for robust statistical inference. The use of matching techniques is also advised to reduce bias and errors, thereby aligning with current methodological standards for scientific publication. The findings of this study contribute to the growing body of knowledge on PAS and other diagnostic tools, particularly in developing countries where the lack of access to histopathology and ultrasound remains a common challenge in many hospitals.

It is essential to consider the development of predictive models tailored to the context of developing countries, incorporating clinical variables and basic laboratory parameters. Such models could optimize the use of limited resources particularly in settings with shortages of specialized healthcare personnel and support early assessment of appendicitis severity in pediatric patients.

Conclusion

The PAS≥8 alone is not sufficient to diagnose the severity of acute appendicitis, with a 59.3% predictive diagnostic accuracy and increasing the probability of presenting with the severity of appendicitis by 2.246 times. It could be combined PAS with other variables to create models that help differentiate complicated appendicitis and simple appendicitis in children.

Abbreviations

- PAS: Pediatric appendicitis score
- IY: Youden Index
- USA: United States
- CRP: C Reactive Protein
- ROC: Receiver Operating Characteristic
- AUC: Area under the curve
- PPV: Positive predictive value
- NPV: Negative predictive value
- PMN: Polymorphonuclear
- CI: confidence interval
- SD: standard deviation

Statements and Declarations

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Author's Contribution

The author contributed in full to this study.

Conflicts of Interest

The author declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Data Availability

To request access, for further research purposes, please to write to the corresponding author.

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