Libyan Journal of Medical Research

www.ljmr.ly/

eISSN:2413-6096

Original Article

Clinical Spectrum and Outcomes of Non-Traumatic Acute Abdominal Pain in Hospitalized Children: A Retrospective Descriptive Study

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Received:25/06/2025Accepted:30/07/2025Published:17/07/2025,DOI :https://doi.org/10.54361/LJMR.19.2. 22

ABSTRACT:

Background: Acute abdominal pain is a frequent presentation in pediatric emergency departments, encompassing a broad range of etiologies from benign to life-threatening conditions. Distinguishing between surgical and non-surgical causes remains a clinical challenge. **Objective:** To analyze the clinical spectrum, diagnostic categories, and hospital outcomes of children admitted with non-traumatic acute abdominal pain. **Material and Methods:** A retrospective study was conducted on (84) pediatric patients admitted with acute abdominal pain. Data collected on demographics, clinical features, final diagnoses, management approaches, and hospital stay duration were analyzed. Statistical tests were applied to compare clinical features between surgical and medical cases. **Results:** The most common diagnoses were urinary tract infection (35.7%) and acute gastroenteritis (25%). Appendicitis was diagnosed in (9.5%) of cases, all requiring surgical intervention. No significant association was found between clinical symptoms and surgical need. Hospital stay duration did not differ significantly among diagnostic groups. **Conclusion:** This study confirms that most pediatric admissions for non-traumatic acute abdominal pain are due to medical causes, with UTI and AGE being predominant. Appendicitis was the most common surgical condition. Symptom overlap made clinical differentiation difficult. Ultrasound and labs were essential for diagnosis. Our findings support recent literature on conservative management trends and the importance of imaging.

Keywords: pediatric abdominal pain, appendicitis, urinary tract infection, acute gastroenteritis, ultrasound, diagnosis, hospital stay.

How to cite this article: Ben Saleh. F.H, Clinical Spectrum and Outcomes of Non-Traumatic Acute Abdominal Pain in Hospitalized Children: A Retrospective Descriptive Study

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INTRODUCTION:

Acute abdominal pain is one of the most frequent complaints among pediatric patients presenting to emergency departments and hospital wards. The **etiology** of abdominal pain in children is diverse, ranging from benign self-limiting conditions to serious surgical emergencies [1]. Early recognition and accurate diagnosis are critical to ensure appropriate management and to avoid unnecessary interventions, especially in resource-limited settings [2]. In pediatric populations, non-traumatic causes of abdominal pain such as urinary tract infections (UTIs), acute gastroenteritis (AGE), mesenteric lymphadenitis, and appendicitis are among the most common diagnoses [3]. Differentiating surgical from non-surgical causes based solely on clinical presentation remains a significant challenge due to overlapping symptoms like fever, vomiting, and localized tenderness. As a result, clinicians often rely on a combination of clinical scoring systems, laboratory markers, and imaging studies to guide decision-making [4]. This study aims to analyze the clinical spectrum, diagnostic categories, and hospital outcomes of children admitted with non-traumatic acute abdominal pain. By identifying prevalent conditions and evaluating the relationship between presenting features and final diagnoses, this research seeks to enhance clinical awareness and support evidence-based approaches to pediatric abdominal pain management.

MATRIALS AND METHODS:

Study Design:

A retrospective descriptive study was conducted from January to October 2024 in the pediatric department of a single university-affiliated teaching hospital.

This design is commonly used to explore patterns and outcomes from hospital-based records in similar pediatric settings [1]

Study Population

The study involved children aged 2 to 14 years who were admitted with non-traumatic acute abdominal pain lasting less than 72 hours. Only those with complete medical documentation—including clinical presentation, diagnostic workup, and treatment data—were included.

Inclusion Criteria

Age between 2 and 14 years

Presentation with non-traumatic acute abdominal pain

Hospital admission during the study period

Complete medical records available for review

Exclusion Criteria

Children with chronic abdominal pain.

Abdominal pain not related to trauma or pre-identified surgical conditions.

Incomplete documentation or missing key data elements.

Data Collection

The following information was collected from medical records

Demographic data: Age, sex.

Clinical symptoms: fever, vomiting, diarrhea, urinary symptoms.

Physical findings: Loin tenderness, suprapubic tenderness, rebound tenderness. Duration and location of pain.

Laboratory investigations: Urinalysis, stool analysis, and inflammatory markers Imaging studies: Abdominal ultrasound, chest X-ray, final diagnosis, management modality (medical or surgical), and length of hospital stay.

This structured approach to data abstraction aligns with previous hospital-based pediatric pain studies [2, 4]

Statistical Analysis

Categorical variables were analyzed using Chi-square or Fisher's exact test; continuous variables via Mann–Whitney U or Kruskal–Wallis test. Significance set at p-value < .0.05

RESULT:

Among the (84) children presenting with abdominal pain of < or = 3 days.

The mean age was 8.17 ± 3.68 years, and (54.8%) were male. The most common reported associated clinical symptoms were fever (81%), vomiting (72.6%), urinary symptoms (45.2%), diarrhea (38.1%) and (6%) of children had cough, shortness of breath. Table 1.

The most frequent final diagnosis was urinary tract infection (35.7%), followed by acute gastroenteritis (25%), mesenteric lymphadenitis (15.5%), appendicitis (9.5%), pneumonia (6%), Henoch-Schönlein purpura (4.8%), and hepatitis A (3.6%). Table 2. & Bar chart.

Clinical symptoms were not significantly different between children who required surgery and those managed medically ($p > 0.05$). Our data show significant difference in symptom duration with ($p < 0.01$); Appendicitis presents with much shorter symptom duration (4–6 hours) compared to medical causes ($p < 0.001$). Hepatitis A and Pneumonia present with longer durations before admission. The

Mean duration of hospital stay was 5.26 ± 2.56 days; median 6 days (IQR 3–7). There is no strong correlation between symptom duration and hospital stay. There was no significant difference in hospital stay duration among the various diagnostic categories (Kruskal–Wallis p = 0.645) Table 3. & Boxplot.

Majority of cases were managed medically (91.7%) and (8.3%) submit to surgical management. Table 4. In Comparative Analysis Results Table 5. & 6. There are no significant difference in symptoms or age between surgical and medical groups. Hospital stay did not differ by diagnosis (p=0.645).

Table 1. Demographic and Reported associated complaints of abdominal pain (n=84)

Variable	Value
Age (years)	Mean = 8.17 ± 3.68
Sex	Male (54.8%), 38 Female (45.2% 46)
Fever	Present in 81%
Vomiting	Present in 72.6%
Urinary Symptoms (Burning micturition, change in urine color and/or frequency).	Present in 45.2%
Diarrhea.	Present in 38.1%
Respiratory symptoms (Cough & shortness of breath).	Present in 6%

Bar chart for Diagnosis distribution

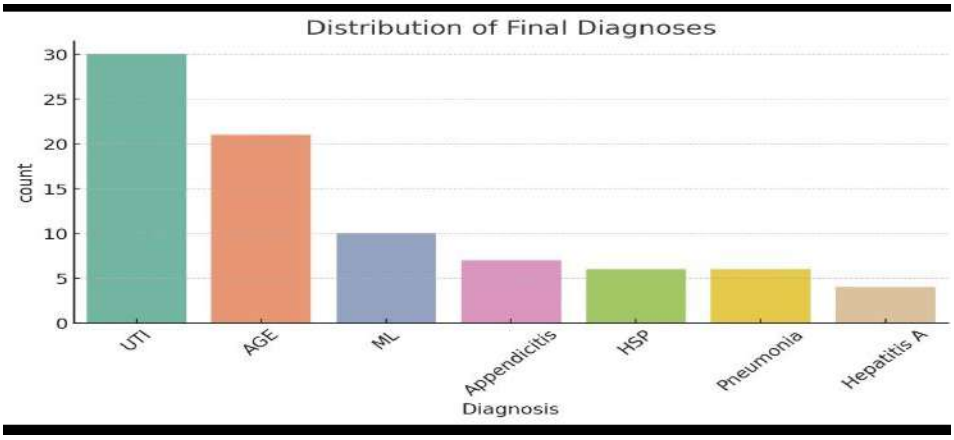

Table 2. Final Diagnosis Distribution:

Diagnosis	N (%)
Urinary Tract Infection	30 (35.7%)
Acute Gastroenteritis	21 (25.0%)
Mesenteric Lymphadenitis	(15.5%) 13
Acute Appendicitis	(9.5%) 8
Henoch-Schönlein Purpura	(4.8%) 4
Pneumonia	(6.0%) 5
Hepatitis A	(3.6%) 3

Table 3. Hospital Stay (Duration of Stay, DOS)

State	Day
Mean ± SD	2.56 ± 5.26
Median (IQR)	6 (3–7)
Range	2– 10 days

Boxplot: for Hospital stay duration by diagnosis

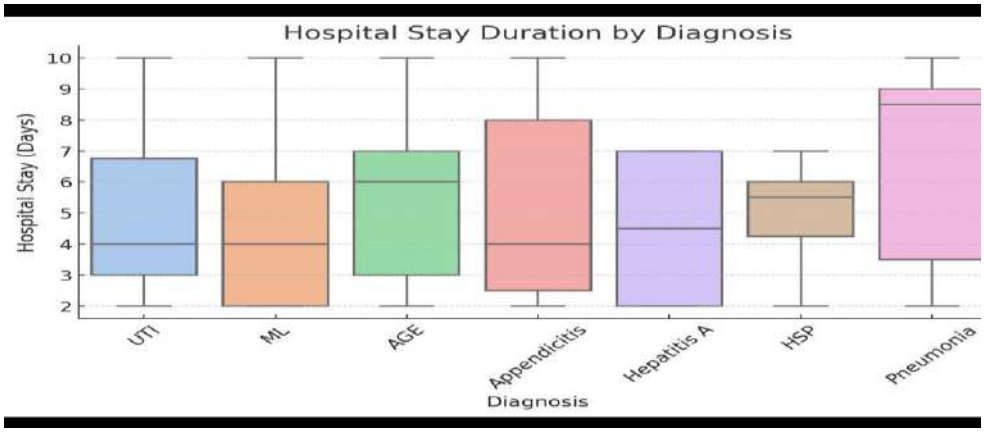

Table 4. Surgical Management

Group	N (%)
Medical Management	77 (91.7%)
Surgical Intervention (Appendicitis Cases)	7 (8.3%)

Table 5: Comparative Analysis (Surgical vs. Medical Management)

Variable	p-value	Interpretation
Fever	0.402	Not significant
Vomiting	0.712	Not significant
Diarrhea	0.498	Not significant
Urinary Symptoms	1.000	Not significant
Age (Mann-Whitney U) test	0.858	Not significant age difference between surgical and medical groups

Table 6. Hospital Stay by Diagnosis

Test	p-value	Interpretation
Kruskal-Wallis Test	0.645	No significant difference in hospital stay across diagnoses

DISCUSSION:

This study analyzed the clinical spectrum and outcomes of non-traumatic acute abdominal pain in children. The findings reflect a predominance of urinary tract infection (UTI) and acute gastroenteritis (AGE) as the leading causes of hospital admission for abdominal pain, consistent with previous pediatric studies [5] Our data demonstrated that 35.7% of cases were due to UTI, which aligns with findings from, highlighting the common presentation of UTI as abdominal pain, particularly in young children [6]. Similarly, AGE accounted for 25% of cases, reinforcing prior reports on the prevalence of gastroenteritis as a primary cause of abdominal complaints in pediatrics [7]. Mesenteric lymphadenitis was another significant diagnosis, comprising 15.5% of cases, which is comparable to prior observations that it is often mistaken for appendicitis due to overlapping symptoms [8]. Appendicitis accounted for 9.5% of cases, matching previously reported frequencies in pediatric populations [9]. Henoch-Schönlein purpura (HSP), pneumonia, and hepatitis A. were also identified as causes of acute abdominal pain, consistent with literature documenting extra-abdominal sources of pain in children [10, 12]. Notably, there was no significant difference in the

presence of symptoms such as fever, vomiting, diarrhea, or urinary symptoms between surgical and medical cases. This highlights the diagnostic challenge in differentiating surgical from non-surgical causes based solely on symptoms [12]. Our study underscores the role of imaging and laboratory investigations in guiding diagnosis and management. The use of ultrasound has proven effective in distinguishing appendicitis from mesenteric lymphadenitis and other conditions, minimizing unnecessary surgeries [11, 13]. The non-operative management of uncomplicated appendicitis is also gaining attention as a safe and feasible option [14, 15]. In our series, all appendicitis cases underwent surgical intervention; however, future studies may explore conservative management pathways. Point-of-care ultrasound (POCUS) is increasingly used in emergency settings and could reduce diagnostic uncertainty in pediatric abdominal pain cases [16]. Hospital stay duration did not differ significantly among diagnostic groups, suggesting that medical management, even for conditions like AGE and UTI, often requires similar inpatient care durations due to dehydration, observation, or complications [17].

Strengths of the Study:

- This study provides a detailed, real-world overview of the clinical spectrum of acute abdominal pain in hospitalized children.
- It included a relatively broad diagnostic spectrum, offering insight into both medical and surgical etiologies.
- Utilization of clinical and statistical analysis strengthens the reliability of observed associations and trends.
- The study reflects actual hospital-based practice in a pediatric university hospital setting, enhancing clinical relevance.

Limitations:

- The retrospective design introduces potential for information bias and missing data.
- The single-center nature of the study may limit generalizability to other populations or healthcare systems.
- No follow-up data were included to evaluate long-term outcomes or recurrence.
- Lack of standardized imaging protocols or scoring systems may have influenced diagnostic consistency.

CONCLUSION

Non-traumatic acute abdominal pain in children is predominantly due to medical conditions such as UTI and AGE. Surgical intervention is relatively uncommon, with appendicitis being the primary surgical cause. Symptomatology alone may not reliably predict surgical need, underscoring the importance of comprehensive evaluation combining clinical assessment, laboratory workup, and imaging.

Recommendations for Future Research:

- Future larger, multicenter prospective studies are recommended to validate these findings and improve generalizability.
- Evaluate the utility of standardized clinical decision tools (e.g., Pediatric Appendicitis Score) in routine assessment.
- Explore non-operative management options, and assess the role of bedside imaging in improving diagnostic accuracy.
- Assess the role of point-of-care ultrasound (POCUS) in improving diagnostic accuracy and reducing unnecessary investigations.

Acknowledgments

The author acknowledges first the parents of all children who enrolled in this study for their cooperation in providing us with requested information. The author also acknowledges the pediatric staff in the pediatric department‹ for their keenness to care for the patients and for their support in the conduction of this study. Finally, I would like to express my thanks and gratitude to ***Dr. Ens Hamza***, who helped me collect data from the patients' medical records.

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