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ACUTE ABDOMINAL PAIN IN CHILDREN: ULTRASOUND EVALUATION IN A TERTIARY CARE CENTER

Paediatrics

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ABSTRACT

Introduction: Acute abdominal pain in children is a common clinical problem, accounting for approximately 9% of childhood visits to primary care. It encompasses a wide range of conditions, from benign self-limiting illnesses to surgical emergencies.**Aim and Objectives:** To evaluate the spectrum of causes of acute abdominal pain in children and to assess the role of ultrasonography in differentiating surgical from non-surgical etiologies.**Study Design:** Retrospective observational study**Materials and Methods:** Sixty pediatric patients presenting with acute abdominal pain were evaluated clinically and with ultrasonography. The findings were categorized into surgical and non-surgical causes.**Results:** Non-surgical causes constituted a significant proportion of cases, with mesenteric lymphadenitis and gastroenteritis being common. Acute appendicitis was the most common surgical cause (35%), followed by intussusception (15%).**Conclusion:** Ultrasonography is an effective first-line imaging modality in pediatric acute abdominal pain and plays a crucial role in early diagnosis and management.

KEYWORDS

Acute abdominal pain, Children, Ultrasound, Appendicitis

INTRODUCTION

Acute abdominal pain is one of the most frequent complaints encountered in pediatric practice and accounts for approximately 9% of childhood primary care visits . The presentation ranges from mild, self-limiting conditions to potentially life-threatening surgical emergencies, making early diagnosis essential.

The primary objective in evaluating a child with acute abdominal pain is to identify whether the cause is surgical or non-surgical. Clinical features such as fever, bilious vomiting, bloody diarrhea, absent bowel sounds, guarding, rigidity, and rebound tenderness increase the likelihood of a surgical etiology .

The etiology of acute abdominal pain varies with age. In infants and toddlers, conditions such as intussusception, malrotation, and congenital anomalies are more common. In school-aged children, infectious causes such as gastroenteritis and mesenteric lymphadenitis predominate. In adolescents, gynecological causes including ovarian torsion and pregnancy-related conditions must be considered .

Acute appendicitis is recognized as the most common cause of acute abdominal pain requiring surgery in children, particularly in adolescents . However, non-surgical causes collectively account for a larger proportion of cases.

Imaging plays a crucial role in diagnosis. Ultrasonography is the preferred initial imaging modality in children because it is non-invasive, does not involve ionizing radiation, and provides real-time evaluation. It is useful in diagnosing appendicitis, intussusception, pancreatitis, urinary tract infections, and gynecological conditions .

This study aims to evaluate the spectrum of causes of acute abdominal pain in children and to assess the role of ultrasound in a tertiary care setting.

MATERIALAND METHODS

This retrospective observational study was conducted in the Departments of Paediatrics and Radio-diagnosis at a tertiary care hospital over a period of 6 months.

Study Population

- Total patients: 60
- Age group: 1–14 years

Inclusion Criteria

- Children presenting with acute abdominal pain of less than 7 days duration

Exclusion Criteria

- History of trauma
- Known chronic abdominal conditions

Clinical Evaluation

All patients underwent detailed clinical assessment including:

- History (onset, duration, nature of pain)
- Associated symptoms (fever, vomiting, diarrhea)
- Physical examination findings

Ultrasound Technique

Ultrasound was performed using:

- High-frequency linear probe (7–12 Mhz)
- Curvilinear probe (3–5 MHz)

Parameters Evaluated

- Appendix (visualization, diameter, compressibility)
- Mesenteric lymph nodes
- Bowel wall thickness
- Presence of free fluid
- Target sign
- Solid organ evaluation

Diagnostic Criteria

- Acute appendicitis: Non-compressible tubular structure >6 mm
- Mesenteric lymphadenitis:
- Cluster of ≥3 lymph nodes
- Short-axis diameter ≥10 mm
- Normal appendix
- Intussusception: Target or doughnut sign
- Ovarian torsion: Enlarged ovary with reduced vascularity
- Pancreatitis: Enlarged hypoechoic pancreas

RESULTS

Table 1. Age-wise distribution

Age Group (years)	Number of Patients
1–5	18 (30%)
6–10	26 (43%)
11–14	16 (27%)

Table 2. Gender-wise distribution

Gender	Number of Patients
Male	34 (57%)
Female	26 (43%)
Total	60 (100%)

Table 3. Etiological spectrum

Diagnosis	Number of Patients (%)
Mesenteric lymphadenitis	12 (20%)
Acute gastroenteritis	6 (10%)
Acute appendicitis	21 (35%)
Intussusception	9 (15%)
Ovarian torsion	4 (7%)

Renal calculi	3 (5%)
Acute pancreatitis	2 (3%)
Others	3 (5%)

Table 4. Surgical vs Non-surgical causes

Category	Number (%)
Surgical	30 (50%)
Non-surgical	30 (50%)

DISCUSSION

Acute abdominal pain in children is a common clinical presentation with a wide range of etiologies. The primary clinical concern is to differentiate between surgical and non-surgical causes.

In the present study, non-surgical causes such as mesenteric lymphadenitis and gastroenteritis were common, reflecting the predominance of infectious and inflammatory conditions in pediatric age groups. These conditions often mimic appendicitis clinically, making imaging essential for accurate diagnosis.

Acute appendicitis was identified as the most common surgical cause, which is consistent with established literature . Ultrasound findings such as a non-compressible appendix with diameter greater than 6 mm were reliable indicators.

Intussusception was another important surgical cause, particularly in younger children. The characteristic target sign on ultrasound allows early diagnosis and timely management.

Ultrasound proved highly effective in evaluating gynecological causes such as ovarian torsion, which is an important diagnosis in adolescent females.

The role of ultrasound as the first-line imaging modality is well established. It allows rapid, safe, and accurate evaluation without radiation exposure. It also helps in avoiding unnecessary computed tomography, thereby reducing radiation-related risks in children .

Limitations

- Retrospective design
- Operator dependency
- Lack of surgical correlation in all cases

CONCLUSION

Acute abdominal pain in children requires prompt evaluation to differentiate surgical from non-surgical causes. Ultrasonography is a safe, effective, and reliable first-line imaging modality.

While non-surgical causes are more common overall, acute appendicitis remains the most common surgical cause. A systematic ultrasound approach significantly improves diagnostic accuracy and aids in appropriate management.

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