

(RESEARCH ARTICLE)



## Acute appendicitis in children: A series of 75 cases in the pediatric surgery unit in the general surgery department at Ignace Deen National Hospital

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### Abstract

**Introduction:** Acute appendicitis is an acute inflammation of the vermicular appendix.

The objective of this study was to describe the clinical and therapeutic aspects of acute appendicitis in children in the pediatric surgery unit in the general surgery department.

**Material and methods:** This was a descriptive prospective study lasting one year from January 1, 2022 to December 31, 2022 carried out in the pediatric surgery unit in the general surgery department at the hospital. National Ignatius Deen.

**Results:** We collected 75 cases, i.e. a frequency of 37.5% compared to all the digestive surgical pathologies operated on. The most affected age group was 11-15 years or 46.66%. The female sex was predominant at 60% with a sex ratio of 0.78. Abdominal pain localized to the FID was observed in all patients, i.e. 100%. The treatment was essentially surgical under general anesthesia with the main approach: an incision at the Mac Burney point. The latero-caecal position was the most observed at 76%. The postoperative course was simple in 86.67% of patients and complicated in 13.33% of patients.

**Conclusion:** Acute appendicitis is a frequent reason for consultation in the pediatric surgery unit.

**Keywords:** Appendicitis; Acute; Pediatric surgery unit; Hospital

### 1. Introduction

Acute appendicitis is an inflammation of the ileocecal appendix, and represents the most common visceral surgical emergency with a lifetime risk of 8.6% for men, and 6.7% for women in countries industrialized [6].

Children with abdominal pain develop appendicitis in 1-8% of cases. Acute appendicitis is the most common abdominal surgical emergency in children [1]. Due to the absence of anatomo-clinical parallelism linked to the polymorphism of the lesions and to the variations of the anatomical positions, the diagnosis sometimes remains difficult and a source of

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multiple controversies [7]. Due to the different clinical expressions of acute appendicitis and the varied locations of the appendix in the abdominal cavity, the diagnosis can be difficult; nevertheless, the initial symptom is almost always abdominal pain present in 95% of cases, with a rise in temperature (above 38°C) as a general sign but the latter is not constant (Haute Autorité de Santé. 2012). Moreover, the biological results combined with the clinical data can lead to a more precise diagnosis; in 80 to 85% of cases, hyperleukocytosis with neutrophilic predominance is thus found; however, it remains not very specific (Haute Autorité de Santé) [6]. The diagnosis of acute appendicitis remains difficult and problematic mainly in young children, exposing to a high rate of white appendectomy of the order of 20 to 25% [5] while the diagnostic misunderstanding of acute appendicitis exposes them to a risk of complications, mainly in the form of perforation [10]. The management of acute appendicitis continues to generate controversy over the usefulness and choice of diagnostic tests; the need in all cases for surgical treatment; the best operative technique (laparoscopy or open surgery); the choice and duration of perioperative antibiotics and the optimal management of an appendicular mass [1]. In Guinea, few publications have been made on acute appendicitis in children. It is those who motivated the realization of this study which aimed to describe the clinical and therapeutic aspects of acute appendicitis in children in the pediatric surgery unit in the general surgery department.

## 2. Material and methods

This was a prospective descriptive-type study lasting one year from January 1, 2022 to December 31, 2022 carried out in the Pediatric Surgery Unit in the General Surgery Department at Ignace Deen National Hospital. Were included, all patients operated for acute appendicitis aged 0-17 years. Excluded were patients operated for acute appendicitis aged over 17 and patients operated for other digestive pathologies. Our study variables were epidemiological, clinical, therapeutic and prognostic. Our data was collected and analyzed with Epi Info software in version 7.2 and Microsoft pack 2013.

## 3. Results

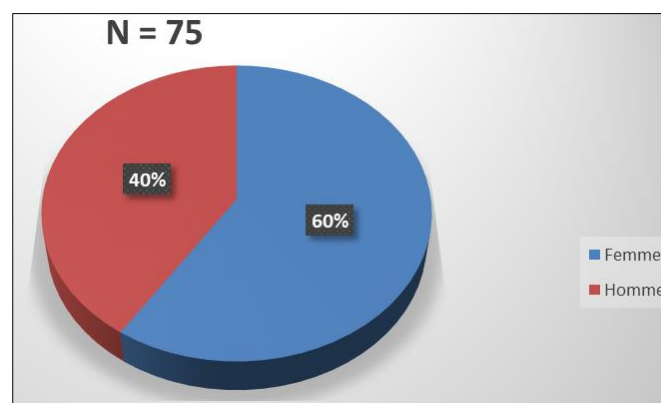
Out of a total of 200 patients, we collected 75 cases of acute appendicitis, i.e. 37.5% hospital frequency.

Table 1 reports that the age groups of 11 – 15 years were the most affected, i.e. 46.66%, the average age was 13 years, the extremes of 7 and 17 years with a sex ratio of 0.78.

**Table 1** Distribution of patients according to age groups

Age	Number	Proportion (%)
6-10	11	20.4
11-15	29	53.7
≥ 16	14	25.9
Total 54,100		

The female sex was the most affected in 45 cases or 60% with a sex ratio of 0.78. (Fig 1)



**Figure 1** Distribution of patients by gender

Table 2 reports that pain was the main symptom that was noted in all our patients, accompanied by fever in 40 cases, i.e. 53.3%, transit disorders such as constipation in 38 cases, i.e. 50.6%, diarrhea in 6 cases or 8% and digestive signs such as nausea and vomiting respectively in 36% and 12%.

**Table 2** Breakdown of patients by reason for consultation

Reasons for consultations	Numbers	Proportion (%)
Abdominal pain	75	100
Headaches	36	48
Fever	40	53.3
Constipation	38	50.6
Nausea	27	36
Dizziness	12	16
Vomiting	9	12
Diarrhea	6	8

The onset was sudden in 65 cases or 86.67% and progressive in 10 cases or 13.33%.

Physical signs were dominated by Blumberg and Rovsing in all patients; abdominal defense in 8 patients or 10.67%.

Hyperleukocytosis with polymorphonuclear neutrophils (> 11,000/mm<sup>3</sup>) was noted in 55 patients, i.e. 73.33%, C-reactive protein was higher than normal in 48 patients, i.e. 64%. Abdominal ultrasound was performed in 5 patients and was contributory in 2 cases.

All our patients benefited from preoperative antibiotic based on ampicillin 1 g and infusable paracetamol for patients who had presented fever.

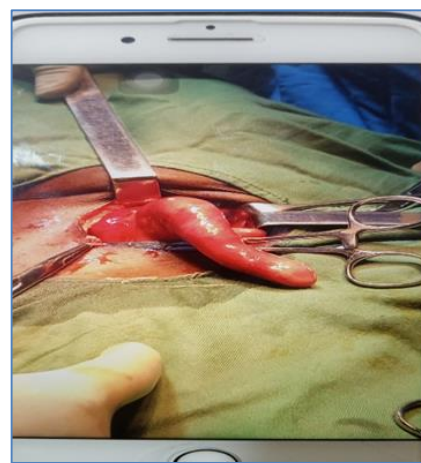
A laparotomy with the Marc Burney stitch approach was performed in all our patients.

Peroperative exploration allowed us to find an appendix in the latero-caecal position in 57 cases, i.e. 76%, and retro-caecal in 18 cases, i.e. 24%.

We observed a catarrhal appendix in 67 patients or 89.33; phlegmonous in 5 cases or 6.67% and abscess in 3 cases or 4%.



**Figure 1** Appendice catarrhale



**Figure 2** Appendice phlegmoneuse

The postoperative course was simple in 65 patients, i.e. 86.67%, we recorded 10 cases of early postoperative complications such as parietal suppuration, i.e. 13.33%.

The average duration of hospitalization was 24 hours (1 day) with extremes of 12 hours and 5 days.

#### 4. Discussion

Acute appendicitis occupied the first place of digestive surgical emergencies in children in our study with a frequency of 37.5%. This frequency was superimposable on that found by J.R.Mabiala - Babela et al. [4] who noted a frequency of 30.3%, on the other hand higher than those recorded by M. Keita et al.[3] and Engbang Ndamba Jean Paul et al.[6] respectively 18.24% and 26.2%.

In our study the average age was 13 years with extremes of 7 and 17 years. Our results are similar to those reported by Ndour.O et al. [8] and NIANG Fallou Galass et al. [2] who recorded an average age of 10.8 and 10 years. Our results agree with the data of the literature which reports that this pathology is rare before 5 years. No case had been notified in a child under 5 years of age during this study. In this series, there was a predominance of the female sex in 60% with a sex ratio of 0.78. Our results are different from those reported in others [1, 9, 7, 4] who observed a male predominance. This predominance of the female sex in our study could be explained by the contiguity of the internal genital organs with the appendix which are frequently affected by infections and a white appendectomy linked to the non-realization of an ultrasound in the majority of our patients.

During this study, the symptomatology was dominated by abdominal pain which had been noted in all patients (100%) accompanied by fever 53.3%, transit disorders 50.6% and digestive disorders 48%. In other studies the same results were found [9, 6, 7, 1]. During this study, we noted that the onset was sudden in 86.67% and progressive in 13.33%. This result confirms the literature data.

In this series, the most observed physical signs were Blumberg and Rovsing in 100%, abdominal defense in the right iliac fossa in 10.67% of cases. The same data had been found in several studies [9, 6, 1]. We recorded hyperleukocytosis with polymorphonuclear neutrophils in 73.33%. These are superior to the results found in other studies, in particular [2, 6, 9] which respectively noted 54.8%; 44.4% and 64.29%. In the study by Boumas N et al. [1] and R. Khemakhem et al. [7], their results were superior to the results we found, which noted 79.2% and 80.82% respectively. During this series, we noted a value of C reactive protein higher than normal in 64%, our results are below those recorded by Boumas N et al. [1] and Engbang Ndamba Jean Paul et al. [6] who observed 71.7% and 96.3% respectively.

During this study, all our patients benefited from a laparotomy with an approach to the Marc Burney bridge (100%). In the study [9, 1], the same approach was performed. On the other hand, in the study by Engbang Ndamba Jean Paul et al. [6] who performed a Marc Burney stitch approach in 57% and a midline approach below the umbilical in 23.2%.

During this study, we found an appendix in latero-caecal position in 76%, our results are comparable to those recorded by Boumas N et al. [1] who found a latero-caecal appendix in 72%.

In our study, the anatomo-pathological aspects were dominated by the catarrhal aspect which was observed in 89.33% followed by phlegmonous aspect in 6.67% and 4% abscessed aspect. In the study by Engbang Ndamba Jean Paul et al. [6], a catarrhal appendix was observed in 51.3%, phlegmonous in 19.9%, abscessed appearance in 17.5%; on the other hand, in the study by Boumas N et al. [1], a catarrhal appendix was observed in 70% and an abscessed appendix in 6%. The high frequency of this catarrhal anatomo-pathological aspect in our study could be explained by early consultation in front of abdominal pain and rapid management once the diagnosis is made.

During this series, the postoperative course was simple in 86.67%, we recorded 10 cases of early postoperative complications such as parietal suppuration, i.e. 13.33%.

Our results are close to those found by NDOUR.O et al. [8] who recorded 15.4% parietal suppuration; on the other hand, a similarity was found in the study by Boumas N et al. [1] who noted 13.2% parietal suppuration.

The average duration of hospitalization in this study was 24 hours (1 day) with extremes of 12 hours and 5 days. Our results are different from those found by Boumas N et al. [1] who noted a hospital stay of 6.6 days with extremes of 3 to 13 days. This short hospital stay could be explained by the high number of simple appendicitis in this study.

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## 5. Conclusion

Acute appendicitis is the most frequent abdominal surgical emergency in our context.

The diagnosis is essentially based on the clinic, and arises in front of any abdominal pain sitting in the right iliac fossa with a defense of the abdominal wall most often associated with fever and variably nausea and vomiting. He can be comforted by biology with neutrophilic polymorphonuclear leukocytosis.

The treatment is surgical. It is a pathology whose morbidity and mortality are low subject to early diagnosis and early surgical treatment.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

There is no conflict of interest related to this work.

### *Statement of ethical approval*

All of author of this article have approved

### *Statement of informed consent*

We declare that the consent was obtained from all individual participants included in the study.

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