

The Epidemiological Profile of Acute Appendicitis, about 124 Cases, in the General Surgery Department of the Amissa Bongo Regional Hospital Center in Franceville, Gabon

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Abstract

Acute appendicitis is an acute inflammation of the appendix. It is a surgical emergency. It was a prospective, descriptive and analytical study, between September 2015 and October 2021, focusing on acute appendicitis. It is seen mainly in young subjects and in children, but not exclusively. Its diagnosis is essentially clinical. These were 124 patients operated on for acute appendicitis, with a male predominance: 78 men (62.90%) against 46 women (37.10%). The majority of patients came from Franceville (n = 66) 53.22%. The average age was 29.4 years (extremes 4 years and 54 years). The average admission time was +5.16 or -5.58 hours. Abdominal pain was the main reason for consultation. Physical signs were dominated by MAC Burney sign positivity in 91.1% of cases. Faced with certain doubtful cases, we requested an abdominal ultrasound. Phlegmonous appendicitis was the most frequent (n = 47) 45.96%. The ileocecal localization represented (n = 82) 66.12%, and other particularities in particular: Claudius AMIAND (n = 6), an appendicular duplication, appendicitis and pregnancy a case of crural appendicitis. Conventional appendectomy with burial by Mac Burney was the most used technique (n = 119) 95.42%. Anatomy pathology was rarely performed. The postoperative course was simple in 95.4% of cases. The average stay in inpatient surgery was 4.8 days. Isolated or combined antibiotic therapy was the rule. Postoperative follow-up at 1 month was systematic. Parietal suppuration was the main complication.

Keywords

Appendicitis, Emergency, Surgery, Franceville

1. Introduction

Acute appendicitis is an acute inflammation of the appendix. It is a surgical emergency and is a public health problem. This pathology is a source of multiple complications. Its etiology appears to be multifactorial. Throughout the Western world, operations for appendicitis are decreasing [1]. The decline was particularly significant in the early 2000s, around 8% per year when ultrasound and CT scans became reference examinations in the diagnosis of the disease. Misdiagnoses still persist today. The diagnosis is essentially clinical despite the diagnostic criteria of Alvarado and Saint Jones [2]. The essential prognostic factor is the time elapsed between the onset of clinical signs and treatment [3]. The reference treatment for acute appendicitis is appendectomy under laparoscopy or laparotomy. The current challenge is the adoption of an appropriate diagnostic attitude that both reduces the risk of appendicitis complications and reduces the number of inappropriate appendectomies. In our region, few studies have been carried out on acute appendicitis, hence the interest in this work. The objectives were to determine the clinical, epidemiological, paraclinical and therapeutic aspects of acute appendicitis at CHRAB Franceville.

2. Material and Method

This study took place in the general surgery department of the Amissa Bongo regional hospital center in Franceville, located in the city of Franceville, capital of the province of Haut Ogooué, in the South East of Gabon (675 km from Libreville). This was a prospective, descriptive and analytical study of acute appendicitis operated on in our department (between September 2015 and October 2021). Patients were informed that participation is completely voluntary, and written consent was obtained from each participant before being subjected to the questionnaire and after discussing the objective with the participants. No names were recorded on the questionnaires. Adequate training of data collectors took place to ensure the protection of confidentiality, and all questionnaires were kept safe. Patient information included demographic information (names, age and sex), general clinical data on admission pathologies and clinical history. A total of 124 were operated in this study. We have collected each patient, the epidemiological profile, clinical, biological, radiological and therapeutic particularities. The inclusion criteria were data collected from registers, complete files and patients operated on for acute appendicitis during this period. The criteria for non-inclusion were incomplete records and patients not hospitalized, not operated, arrivals deceased and those refused to participate in this study. Data collection and processing: medical data, registers, operating reports, individual survey

sheets, Word and Excel software. Data analysis was performed using Epi info version 6.0 software. The probability test: we used the Chi2 test with a significance level of $p < 0$. The following data were collected: epidemiological, clinical and surgical data, determined from the operating reports. Evolutionary data: duration of follow-up, complications.

3. Results

3.1. Epidemiological Aspects

Acute appendicitis was found especially in young subjects and in children. There were 124 patients operated on for acute appendicitis. The male predominance with 78 men (62.90%) for 46 women (37.10%), the average age was 29.4 years (extreme 4 years and 54 years (**Figure 1**)). The majority of patients came from Franceville (n = 66) 53.22%, followed by Moanda (n = 25) 20.16%, Okondja (n = 11) 8.87%, Akiéni (n = 9) 7.26%, Lastourville-koulamoutou (n = 2) 1.62%, others (n = 11) 8.87% (**Table 1**).

3.2. Diagnostic Aspects

The average admission time was +5.16 or -5.58 hours. Abdominal pain was the

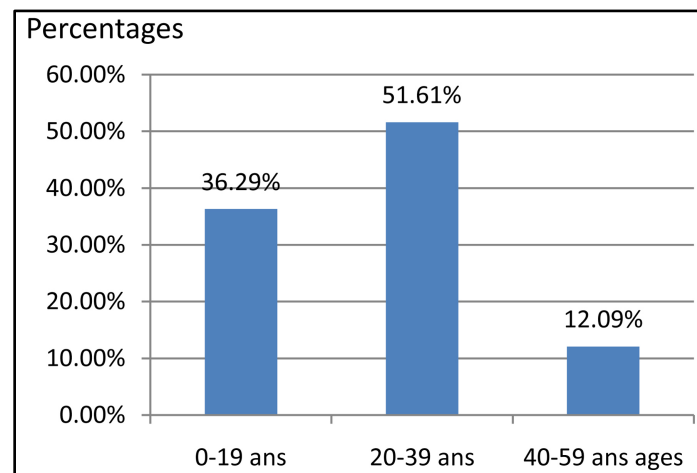


Figure 1. Breakdown by age group.

Table 1. Demographic provenance: majority of patients came from Franceville.

Demographic provenance	Numbers	Percentages
Franceville	66	53.22%
Moanda	25	20.16%
Okondja	11	8.87%
Akieni	9	7.26%
Koulamoutou Lastourville	2	1.62%
Others	11	8.87%
Total	124	100%

main reason for consultation. Fever was present in 74% of cases, vomiting in 43.2%. were dominated by the positivity of the MAC Burney sign in 91.1% of the cases, the defense of the right iliac fossa in 97.2%, the Rovsing sign in 50% of the cases, the Blumberg sign in 39%, the Psoitis in 18.5% and right rectal examination pain in 69.4%. Faced with certain doubtful cases, we had requested an abdominal ultrasound (n = 39) 31.45% and had found 12.57% images in the roundel. The abdomen without preparation had revealed 3.17% cases of hydro aeric level. Phlegmonous appendicitis was the most frequent (n = 47) 45.96%, appendicular abscess (n = 37) 29.83% (**Figure 2**), catarrhal appendicitis (n = 26) 20.96%, perforated (n = 10) 8.06%, appendicular plastron (n = 4) 3.22%. The ileo-coecal location represented (n = 82) 66.12%, subhepatic (n = 4) 3.22%, retrocoecal (n = 13) 10.48%, pelvic (n = 8) 6.45%, and other particularities including: Claudius AMIAND (n = 6) 4.83% (**Figure 3**), a case of appendicular duplication, a case of appendicitis and pregnancy, right crural appendicitis (**Table 2**). Longer appendicitis oscillated between 12 and 15 cm (n = 48) 38.70% with extreme between cm and 20 cm (**Table 3**). Biological examinations found: hyper leukocytosis in 64.67% of cases, anemia in 72.8% of cases, hematocrit down in 33.4% of cases. Therapeutic aspects Conventional appendectomy with burial by Mac Burney was the most used technique (n = 119) 95.42%, followed by 5 conversions to midline laparotomy for localized petonitis. We had completed with a hernia repair in the cases of Claudius Amiand, salpingotomies, ovariectomies. Anatomy pathology had found appendicitis. The average stay in inpatient surgery was 4.8 days.

3.3. Therapeutic Aspects

Medical treatment based on antibiotics, analgesics and rehydration were associated

Table 2. Sites of appendicitis.

Locations	Numbers	Percentages
Laterocoecal	82	66.12%
Retrocoecal	13	10.48%
Pelvic	8	6.45%
Claudius Amian (Inguinal)	6	4.83%
Subhepatic	4	3.22%
Right Crural	1	0.8%

Table 3. Appendicitis lengths.

Appendicitis	lengths	Numbers	Percentages
7 - 12	cm	73	58.87%
12 - 15	cm	48	38.71%
15 - 20	cm	2	1.61%
20 - 25	cm	1	0.81%



Figure 2. Appendicular abscess (image Offobo S).



Figure 3. Inguinal appendicitis, Claudius Amian (image Offobo S).

with surgical treatment according to a well-defined algorithm. The molecules used were ofloxacin, ceftriaxone, metronidazole and gentamycin. The postoperative course was simple in 95.4%. Early postoperative complications were dominated by parietal suppuration 1.9%, and one case of acute anemia in a 50-year-old patient. The average hospital stay was 3.85 days with extremes of 3 and 8 days. Postoperative follow-up at 1 month was systematic.

4. Discussion

We had been confronted with the following difficulties: the absence of laparoscopic surgery requiring conventional surgery in appendectomy, the unavailability of anatomopathology service in the structure delaying or even discouraging the performance of this confirmation examination for certain patients. During our study period, acute appendicitis had occupied 19.73% of surgical interventions, the third surgical indication after strangulated hernias and acute peritonitis. This pathology is also frequently encountered in developed countries and in some African countries, acute appendicitis as the first digestive surgical emergency (43.4%) [1] [2]. On the other hand, in other African countries, particularly in Niger, acute appendicitis (9.65%) is the third digestive surgical emergency after peritonitis (51.61% of cases) and intestinal obstruction (27.49%) [3]. The dif-

ference was also observed at the Center Hospitalier Universitaire Aristide Le Dantec in Dakar in 2016, where it was the second cause after acute intestinal obstruction [4]. This difference could be explained by the fact that our study was carried out in a single hospital. The male predominance in our series was 62.91%, sex ratio of 1.70. This result is close to a study in 2014 in Nigeria, about 293 cases, which found a sex ratio (male/female) of 1.3 [5]. On the other hand, Yaoundé found a sex ratio of 1.37 (*i.e.* 185 men for 138 women) [6].

A global study reported a sex ratio of 0.8 in favor of men; this could be explained by the fact that the study carried out was based on 116 surgery departments distributed around the world with obviously a larger sample size than ours [7]. In the literature appendicitis is a pathology of the young subject, but it can occur at any age of life, its frequency is low at the extreme ages of life. The average age in our series was 29.4 years with extremes of 4 years and 54 years. Studies conducted in India in 2016 also found an age group most affected in the third decade of life (*i.e.* 94 out of 293 cases) [8]. In addition, differences were observed in 2009 in South Africa and in 2017 in France, which found a majority of cases in the second decade of life [9] [10]. All this suggests that acute appendicitis is more common between the second and third decade of life. The average consultation time was +5.16 or -5.58 hours, with extremes of less than 24 hours and 5 days. Other studies have also reported an average time to consultation lower than ours, *i.e.* an average time of 3.05 days [11]. In addition, other authors reported in 2010 an average consultation time of less than or equal to 15 hours in developed countries [12]. An explanation for this still high consultation time in our context lies in the fact that patients in our study still resorted to self-medication, the use of traditional potions, and beliefs where appendicitis is considered a mystical disease in our regions.

Pain was the main functional sign in all patients in our series in 100% of cases (migratory pain in 8.9% of cases and permanent seat in the right iliac fossa in 91.1% of cases), associated with fever in 74% of cases, digestive signs in 62.3% of cases (including vomiting in 43.2% of cases and/or nausea in 28.9% of cases), transit disorders in 14.9% of cases and urinary disorders in 17.0% of cases. This responds to the classic clinical presentation of acute appendicitis found in some studies [7] [9] [10]. Conversely, a 2016 study in India reported a clinical presentation dominated by abdominal pain around the umbilical seat in 96.1% of cases [13]. All this can call into question the classic clinical picture of acute appendicitis. We observe in our series that among the signs associated with abdominal pain, pallor, asthenia, nausea, vomiting and diarrhea are most often encountered in children. On admission of patients, a temperature above 38°C was observed in 74% of cases. An inconstant variation in temperature was also observed in 2015 in Nigeria and found a temperature above 38°C in 32.4% of cases [14]. These results suggest that temperature variation is not constant in acute appendicitis. This is in line with the proposal of the decision-making elements formalized in the technological evaluation report of the Haute Autorité de Santé: "Faced with

abdominal pain, no clinical sign or symptom (including fever or apyrexia) has diagnostic value high enough to confirm or exclude a diagnosis of appendicitis" (Haute Autorité de Santé 2012) [15].

In our series, hematology found hyperleukocytosis (white blood cells >10 G/L) in 64.67% of cases. A small proportion of leukocytosis could be observed in some studies; On the other hand, high proportions of other cases. This difference could be explained by the fact that some patients included in our study resorted to self-medication with antibiotics; nevertheless a doubt settles on the diagnostic value of hyperleukocytosis in acute appendicitis. The CRP in our study was rarely practiced, this due to the lack of technical platform. Some had highlighted the high diagnostic value of CRP in acute appendicitis [16]. This is consistent with the recommendations of the National Agency for the Development of Medical Evaluation (France) of 1996 which stated the CRP as bringing added value to the diagnostic process of acute appendicitis [17]. However, this biological examination does not is not always systematically requested in our context.

Ultrasound was not always systematic at diagnosis but it had helped to reduce white laparotomies. She had objectified an appendicular attack (image in rosette of the appendix with increase in its size) in 12.57%. The abdomen without preparation had revealed 3.17% cases of hydro aeric level. In Côte d'Ivoire have thus demonstrated the diagnostic value of indirect ultrasound signs (sensitivity 83.9% and specificity varying between 56.7% and 96.7%) of acute appendicitis in adults. [18]. (However, the recommendations of the National Agency for the Development of Medical Evaluation (France) of 1996 had also identified abdominal CT as bringing added value to the diagnostic process of acute appendicitis, with a sensitivity of 98.5% and a specificity of 98% which have been proven by other studies [19] [20]. CT was not available in our structure. In our study, phlegmonous appendicitis was the most frequent (n = 47) 45.96%, appendicular abscess (n = 37) 29.83%, catarrhal appendicitis (n = 26) 20.96%, perforated appendicitis (n = 10) 8.06%, appendicular plastron (n = 4) 3.22%. These results are different, some authors found the catarrhal appearance in 58.2% of cases and the abscessed or suppurative appearance in 41.8% of cases [6]. Significant difference could be explained in our series between the peroperative lesions of the appendix, the always high number of cases of abscessed or suppurated appendix, knowing that the average consultation time is still just as high. Data from the literature where such unusual results are also found, although these cases are less frequent pose a diagnostic problem because the clinical presentation of the patient is the typical picture of acute appendicitis [21], hence the importance of a systematic anatomic-histopathological examination of all appendix parts. In our structure, in view of the unavailability of laparoscopic surgery, appendectomy is performed by laparotomy. Medical treatment based on antibiotics, analgesics and rehydration were associated with surgical treatment according to a well-defined algorithm. Conventional appendectomy with burial by Mac Burney was the most used technique (n = 119) 95.42%, followed by 5 conversions to midline lapa-

rotomy for localized peritonitis. We had completed with a hernia repair in the cases of Claudius Amiand, salpingotomies, ovariectomies. All this suggests that appendectomy is the therapeutic modality still most used [22] [23]. However, some studies have demonstrated the effectiveness of medical treatment in uncomplicated acute appendicitis [24] [25]. A bacteriological examination was carried out in a few patients. The molecules used were ofloxacin, ceftriaxone, metronidazole and gentamycin in identified and isolated patients. All this is in line with certain studies which also found *E. coli* as the most frequent germ [26]. Nevertheless, probabilistic antibiotic therapy during hospitalization in our context no longer responds to the use of a third-generation cephalosporin, acid amoxicillin, metronidazole because we had observed resistance. The length of the appendix in our study varied between 7 and 20 cm with an average of 11.6 ± 2.6 cm. The length values are comparable to some authors who found a length that varied between 4 and 25 cm with an average of 9.0 ± 2.9 cm [27]. Postoperative complications were therefore dominated by parietal suppuration, morbidity was 5.96%, with also septic complications of 78.94% and mortality was 2.67% [28]. On the other hand, other authors find a lower morbidity of 76.1% of with complications up to the sixth postoperative month and a mortality of 0.28% [29]. The hospital stay for surgery lasted an average of 4.8 days. This average duration of hospitalization was higher than that found in other studies [30].

5. Conclusion

Acute appendicitis remains a frequent surgical emergency in our region. It is a pathology of young adults but can be found at all ages of life. The symptomatology is polymorphic and the diagnosis is clinical. Treatment is surgical, preferably laparoscopic surgery. Pathology remains essential. Morbidity and mortality are low with early diagnosis and surgical treatment.

Conflicts of Interest

No conflict and interests.

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