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Appendiceal Abscesses: Epidemiological, Clinical, and Therapeutic Aspects in the General Surgery Department at the Pr Bocar Sidy Sall University Hospital Center in Kati (Mali)

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Abstract **Original Research Article**

Introduction: Appendiceal abscess is a progressive complication of acute appendicitis. It is a common abdominal surgical emergency. The prognosis can be worsened by the occurrence of generalized acute peritonitis. ***Objectives:*** To study the epidemiological, clinical, and therapeutic aspects of appendiceal abscesses at CHU Pr Bocar Sidy Sall in Kati. ***Methodology:*** This was an analytical descriptive study with retrospective and prospective data collection, covering the period from January 1, 2014, to December 31, 2023, a period of 10 years. ***Results:*** During this study period, we collected 76 cases of appendiceal abscesses. This represented 1.27% of consultations, 4.68% of digestive surgical emergencies, and 20.10% of acute appendicitis cases. The average age of the patients was 30.59 years and the sex ratio was 2 in favor of men. The diagnosis was mainly clinical. The average time to admission was 5 days. Clinically, pain in the right iliac fossa and fever were present in all patients upon admission. This pain was associated with vomiting in 90.79% (n=69) of cases. Open surgery was performed in all cases. The surgical approach was a McBurney point incision in 92.10% (n=70), a subumbilical midline incision in 2.6% (n=2), and a right paramedian incision in 4 patients. The most frequently performed surgical procedure was appendectomy without burying, associated with drainage in 78.9% of cases (n=60). The average hospital stay was 4 days. We recorded 7 cases of wound infections. No deaths were reported. ***Conclusion:*** this is a relatively common condition in young adults, with a predominance in males. Surgical treatment is the only option, consisting of an appendectomy followed by drainage. Early management of acute appendicitis could reduce the occurrence of appendiceal abscesses.

Keywords: appendix, abscess, diagnosis, treatment, Kati.

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INTRODUCTION

Appendiceal abscess is the localized accumulation of pus in the right iliac fossa secondary to acute appendicitis [1]. It represents one of the evolutionary forms following appendiceal perforation, in which the spread of the infection is "contained" by the greater omentum and the small bowel loops, resulting in the formation of a true walled-off abscess within the large peritoneal cavity [1]. It is an initial clinical presentation found in about 50% of adults and constitutes a surgical emergency. The prevalence of acute appendicitis in the general population is estimated to be between 6% and 9% [1]. In the United States, an incidence of 250,000 cases was reported by Attwood *et al.*, [2]. In France, the occurrence of acute appendicitis is around 12 cases per 10,000 inhabitants according to Vons and Brami [3]. Appendiceal abscess accounts for 10% of adult acute appendicitis cases in Africa [4]. In Cameroon in 2010, Guifo Marc Leroy reported 19 cases of appendiceal abscess, representing 9.5% [5]. In Niger, L. James Didier reported 137 cases of appendiceal abscess, representing 19.16% [6]. In Mali, Koumaré *et al.*, in a study of 109 cases of acute appendicitis, found a frequency of 12.5% [7].

The diagnosis of an appendicular abscess is more often suggested during a clinical examination and confirmed through imaging [8]. Ultrasound remains the first-line examination (non-ionizing, simple, and quick) in young patients and pregnant women [9]. It has a

sensitivity and specificity of 83% and 93%, respectively, and holds significant diagnostic value [9]. The advantage of CT scanning lies in its ability to make a definitive diagnosis of acute appendicitis (sensitivity and specificity of 94% according to a 2006 meta-analysis) in doubtful or difficult cases, primarily by helping to rule out the numerous differential diagnoses associated with right iliac fossa pain and guiding the surgical approach [10].

The treatment is both medical and surgical. Appendectomy combined with drainage remains a matter of debate. Radiological drainage (ultrasound-guided or CT-guided) of the appendicular abscess followed by delayed appendectomy 3 to 6 months later is an alternative [10]. In the absence of early surgical drainage, the abscess spontaneously progresses to appendiceal peritonitis [10]. Given the increasingly high frequency of appendicular abscesses in our context and the lack of specific studies on this condition at CHU Pr BSS in Kati, we initiated this study in the general surgery department with the aim of determining the frequency, describing the clinical and therapeutic aspects, and analyzing the postoperative outcomes of appendicular abscesses.

METHODOLOGY

This was an analytical descriptive study with both retrospective and prospective data collection, covering the period from January 1, 2014, to December 31, 2023, a total of 10 years. All patients admitted and operated on in the department for appendicular abscess were included in this study. We excluded cases of appendicular abscess operated on outside the department and incomplete records. Data collection was carried out from operative report registers, patient files, and hospitalization registers.

We established an analytical form to study the following parameters: age, sex, occupation, nationality, length of hospitalization, clinical and paraclinical signs, diagnosis, various medical and surgical treatments, pathology, bacteriology, and postoperative follow-up. The data were entered and analyzed using SPSS version 26. Word processing and the creation of graphs were done using Microsoft Word Office 2016 and Excel 2016, respectively. The statistical test used was the chi-square test with a significance level of 0.05.

RESULTS

During this study period, we collected 76 cases of appendicular abscesses. This represented 1.27% of consultations, 4.68% of digestive surgical emergencies, and 20.10% of acute appendicitis cases. The average age of the patients was 30.59 years, with extremes ranging from 10 to 70 years. The sex ratio was 2, with a male predominance. Students were the most affected group, with a frequency of 27.63% (n = 21), followed by farmers at 23.68% (n = 18). The average delay in admission was 5 days.

Clinically, right iliac fossa pain and fever were present in all patients at admission. This pain was associated with vomiting in 90.79% (n=69) of cases. Table 1 summarizes the functional and general signs observed. On physical examination, a painful fluctuating mass in the right iliac fossa associated with abdominal guarding was the most commonly found. Table 2 summarizes the physical signs observed. Biologically, a concomitant elevation of C-reactive protein and leukocytes was noted in 89.8% (n=68) and 86.80% (n=66) of cases, respectively.

Abdominal ultrasound was performed in 73 patients, allowing the detection of a peri-appendiceal effusion in 81.6% (n=62). After brief resuscitation, all patients underwent surgery, with the approach being a McBurney incision in 92.10% (n=70), a subumbilical median incision in 2.6% (n=2), and a right paramedian incision in 4 patients. Intraoperatively, the appendix was perforated in 53.9% (n=41) of cases. The amount of pus aspirated exceeded 100 cc in 32.9% of patients (n=25). The most frequently performed surgical procedure was appendectomy without burial, associated with drainage, in 78.9% of cases (n=60). Table 3 summarizes the surgical techniques. Surgical treatment was accompanied by medical treatment based on dual antibiotic therapy (third-generation cephalosporins and imidazoles). Bacteriological analysis of the pus allowed the isolation of Escherichia coli in 66 patients. Acute phlegmonous appendicitis was found in 44 patients (57.89%) on histopathological examination. The average hospital stay was 4 days, with extremes of 2 and 15 days. We recorded seven (07) cases of wound infections. No deaths were reported.

Table 1: distribution of patients according to functional and general categories

Reason for admission	Percentage
Abdominal pain	100% (n=76)
Fever	100% (n=76)
Vomiting	90,79% (n= 69)
Urinary problems	76,31% (n= 58)
Transit stops	65,79% (n=50)
Diarrhea	53,95% (n= 41)

Table 2: Distribution of patients according to physical signs

Physical signs	Percentage
Saburral language	67% (n=51)
Painful mass in the right iliac fossa (RIF)	98,7% (n=75)
Abdominal guarding	92,10% (n= 70)
Localized opacity in the FID	53,9% (n= 41)
Pain localized on the right during rectal examination (RE)	84,21% (n=64)
Bulging of the back of the Douglas pouch on the TR	10,53% (n=8)

DISCUSSION

1-Epidemiological aspects

Appendicular pathology is a common and worldwide surgical emergency. During our study, the hospital frequency of appendicular pathology was 6.11% (378/6188). The prevalence in the general population is estimated between 6% and 9% according to the literature [1]. Our frequency falls within this range. In our series, appendicular abscesses accounted for 20.10% of all appendicular pathology. This frequency does not differ from that reported by Burkinabé authors, 29.2% (p=0.24) [11]. It differs from that of Guifo M in Cameroon in 2010, who reported 9.5% (p=0.04) [5]. This difference could be explained by the early management of appendicular disease in its acute phase in the Cameroonian series. The average age of our patients was 30.59 years, with a sex ratio of 2 in favor of men. This age is comparable to that reported by American authors (p≥0.05) [2]. Appendicular disease is the prerogative of young adult males, as evidenced by Kambiré and Magagi [12,13]. Farmers accounted for 23.68% (n=18). This same proportion was found in JL Kambiré's study in Burkina Faso [11]. The high proportion of farmers in the general population of Mali, an agriculturally oriented country, could explain this.

2-DiagnosticAspects

The average admission delay was 5 days, the same delay reported by Engbang JP in Cameroon [14]. This long admission delay for our patients could be explained by: self-medication or traditional treatment as first-line measures, the insufficiency of technical facilities in peripheral health structures, and difficulties related to patient referrals. In the literature, physical signs are essential for confirming the diagnosis of appendiceal abscess [14]. In our study, severe, sleepless abdominal pain associated with a fluctuating fever of 39°C and vomiting was the most commonly observed. On physical examination, a tender, fluctuating mass located in the right iliac fossa was noted, along with abdominal guarding and pain on rectal examination. The same observation was made by Engbang in Cameroon [14]. Physical examination remains a crucial step in the diagnostic process, allowing the surgeon to support the diagnosis when certain objective signs are present. However, the clinical polymorphism of appendiceal pathology justifies the use of imaging studies in doubtful cases [14]. In our study, ultrasound contributed to the diagnosis in 81.6% of cases. Abdominal computed tomography also enables the diagnosis of acute appendicitis [15]. It is the reference complementary examination for any abdominal emergency in case of diagnostic doubt, due to its high sensitivity according to Zeghari [15]. In our study, none of our patients underwent CT due to its unavailability in emergency situations.

3-Therapeutic Aspect

Surgery was performed via an open approach in all our patients. However, laparoscopy is increasingly preferred for the management of appendiceal abscesses. Intraoperatively, the appendix was perforated in 53.9% (n=41) of cases. The most commonly performed technique in our study was appendectomy with cleaning and drainage in 78.9%. The same technique was performed in the Central African and Cameroonian series, with 79.3% (p=0.7) and 73.7% (p=0.5) respectively [5,16]. Surgical treatment was initially combined with empirical dual antibiotic therapy (third-generation cephalosporins and 5-nitroimidazoles) and then adjusted according to the results of the antibiogram.

4-Evolutionary aspects

The average length of hospital stay was 4 days, comparable to the Ivorian series (p=0.45) [17]. We recorded 7 cases of parietal suppurations (9.21%). This result is lower than that of Engbang in Cameroon, who found 19.9% [14]. The variability in morbidity depends on several factors, including the clinical condition of the patient, aseptic conditions, and the nature and duration of the intervention, according to Kitzis [17]. No deaths were recorded in our series.

CONCLUSION

Appendiceal abscess is a common complication of acute appendicitis. Early diagnosis and prompt management of any acute appendicitis could prevent the occurrence of this complication. Surgical treatment combined with antibiotic therapy yields good results. The prognosis remains favorable.

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