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Acute Appendicitis and Complications at Bouake University Hospital: Epidemiological, Diagnostic and Therapeutic Aspects

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Abstract

Objectives: To describe the epidemiological, diagnostic and therapeutic aspects of acute appendicitis and complications.

Methods: Retrospective descriptive study of patients admitted for acute appendicitis and complications at the University Hospital of Bouaké, from January 2010 to December 2018.

Results: We collected 1552 cases of acute appendicitis and complications, which represents 30% of patients admitted to the service. The average age of the patients was 23 ± 9. We noted 56% of men (n=869) and 44% (n=683) of women. The average delay of consultation was 3 days (range 1 and 8 days). The reason for consultation was mainly pain in the right iliac fossa. Abdominal ultrasound was the main complementary examination performed in 1273 patients, i.e. 82% of cases. Acute appendicitis was uncomplicated in 1140 patients, i.e. 73% of the patients. They were complicated in 412 patients, i.e. 27% of cases. Among the complicated forms, 240 cases (14%) of appendicular peritonitis, 119 cases (8%) of appendicular abscesses and 52 cases (3%) of appendicular plastrons were recorded. The appendix was catarrhal, phlegmonous, gangrenous, and perforated in 62% (n=962), 20% (n=310), 13% (n=202), and 5% (n=78) of cases, respectively. All appendicular plastrons had initial medical treatment. All appendicitis cases underwent appendectomy by laparotomy. The average duration hospitalization was 2 days (range 1 and 15 days). The postoperative course was simple in 1151 (98%) patients. Suppuration of the surgical site was observed in 28 patients, i.e. 1.8% of cases. We noted 2 deaths, i.e. a case fatality rate of 0.2%.

Conclusion: Acute appendicitis is a frequent abdominal emergency. It is a condition that mainly affects adolescent and young adult males. The treatment of choice is surgical. The morbidity is dominated by parietal suppuration.

Keywords: Appendix; Young subject; Appendectomy

Introduction

Acute appendicitis has been one of the most frequent digestive surgical emergencies for several years [1,2]. It is a recurrent pathology that every surgeon is confronted with. For a long time, it was considered as a condition whose diagnosis was essentially clinical, but nowadays this dogma is tending to disappear due to the new medical imaging techniques.

Studies have shown satisfactory results in the treatment of acute appendicitis with antibiotic therapy [3-5]. However appendectomy remains the preferred therapeutic standard for the treatment of acute appendicitis [1,6].

In our country (Cote d'Ivoire) we have noted the scarcity of works concerning this pathology. Therefore, an update of the data was necessary. It is for these reasons that we initiated this work whose objective was to describe the epidemiological, diagnostic and therapeutic aspects of acute appendicitis and complications at the University Hospital of Bouaké.

Methods

This was a retrospective and descriptive study from January 2010 to December 2018. The setting of the study was the digestive and general surgery department of the University Hospital of Bouaké.

All patients who were admitted with or without surgery for acute appendicitis complicated or not, were included in the study.

Not included were cases of acute appendicitis and complications outside the scope of the study, patients with a history of appendectomy, and patients with incomplete medical records.

The registers of operative reports, consultations, hospitalizations and emergency admissions were used to collect information. The parameters studied were age, sex, socio-professional status, whether the appendicitis was complicated or not, duration of hospitalization, treatment and evolution. Word processing was done with the software "WORD" 2013 and the software "ZOTERO" was used for reference management.

Results

Between December 2008 and January 2010, 1552 cases of acute appendicitis and complications were managed. They constituted 30% of abdominal surgical emergencies. The patients were male in 56% (n=869) and 44% (n=683) female. The sex ratio was 1.3. The mean age was 23 ± 9 with extremes of 4 and 89 years. The age range of 20-30 years represented 50% (n=776) of the patients. Among our patients we noted 28% (n=435) of students. No comorbidity was detected.

The average time to consultation was 3 days, with extremes ranging from 1 to 8 days. Right iliac fossa pain was the primary reason for consultation. 1242 patients, or 80%, had at least two signs. Pain, vomiting or nau-

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sea was found in 807 patients or 52% of cases. Abdominal pain and fever were found in 155 patients or 10% of cases. Patients who had more than two signs constituted 38% (n=590). Right iliac fossa pain was isolated in 310 patients, or 20% of cases. Palpation of the abdomen found localized pain with right iliac fossa defensiveness in 93% of cases (n=1443). In 17% of cases (n=264), the entire abdomen was tender with a predominance of pain in the right iliac fossa. A painful mass was found in 11% of patients (n=170). Abdominal ultrasound was performed in 1273 patients, i.e., 82% of cases. It was contributive in 79% of cases. Direct signs of acute appendicitis were found in 64% of cases (n=993). Indirect signs were found in 15% of cases (n=233). An abdominal X-ray was requested in 217 patients, i.e. 14% of cases. A stercolith image was found in 35 patients or 15% of cases. No gas crescent was noted. No abdominal CT scan was performed. 60% of the patients had a leukocytosis lower than 10,000 elements/mm3. At the end of the clinical and paraclinical work up, acute appendicitis was uncomplicated in 73% of cases (n=1140) and complicated in 412 patients, i.e. 27% of cases. These complicated forms consisted of appendicular peritonitis (n=240; 14%), appendicular abscesses (n=119; 8%) and appendicular plastrons (n=53; 3%) (Table 1).

Table 1: Appendicular complications

	Number	Percentage (%)
Appendicular peritonitis	240	14
Appendicular abscesses	119	8
Appendicular plastrons	53	3

All appendicular swellings (3%) required medical cooling treatment initially and appendectomy was performed secondarily. The remaining patients were all operated on as emergencies. The Mac Burney point approach was used in 73% of cases (n=1140). Patients with a diagnosis of peritonitis or appendiceal abscess had a midline laparotomy in 23% of cases (n=359).

The location of the appendix was right iliac, retrocaecal, pelvic and subhepatic in 70% (n=1086), 26% (n=404), 3% (n=45) and 1% (n=17) of cases respectively. It was catarrhal, phlegmonous, gangrenous, and perforated in 62% (n=962), 20% (n=310), 13% (n=202), and 5% (n=78) of cases, respectively (Table 2).

Table 2: Location of appendix

	Number	Percentage (%)
Right iliac	1086	70
Retrocoecal	404	26
Pelvic	45	3
Subhépatic	17	1
Total	1552	100

The average hospital stay was 2 days (range 1 and 15).

The postoperative course was simple in 72% of cases. The operative morbidity represented essentially by suppurations of the operative wound was 1.8% (n=28). Postoperative mortality was 0.2% (n=2). These were two patients operated on for appendicular peritonitis. The death occurred in a context of hypovolemic shock.

Discussion

Acute appendicitis represents one of the most frequent abdominal surgical emergencies [3,4]. In our study, it represents the first abdominal surgical emergency with 30% ahead of acute generalized peritonitis and acute intestinal obstruction. The individual lifetime risk is estimated at 8.6% in men [1]. Our series shows a male predominance. This finding has been made by other authors [3,5]. Acute appendicitis is a pathology of the young subject [3]. 70% of patients who present with acute appendicitis have it before the age of 30 [2]. Our patients had a mean age of 23 ± 9. There was a predilection for the condition in the age group 20-30 years.

The diagnosis of acute appendicitis is based on biological clinical parameters in its typical form. Imaging tests are prescribed in case of doubt or complication. Abdominal pain is the main symptom found in the majority of studies [2,3,5]. In our series, abdominal pain was the most frequent reason for consultation and was found in all our patients. Right iliac fossa defensiveness has a specificity of 72% and a sensitivity of 96% [6]. In our study, right iliac fossa defensiveness was found in 93% of patients. Kassem et al also found right iliac fossa defensiveness in all his patients in his series [7]. In the literature there is a controversy about the use of hyperleukocytosis as one of the biological markers of acute appendicitis. For some authors, hyperleukocytosis is not a significant marker in the diagnosis of acute appendicitis [8]. On the other hand, according to Allister et al. hyperleukocytosis is significant [9]. In our work context, the haemogram was the biological examination performed. It is less expensive and accessible in emergency. In our study, 60% of the patients did not have hyperleukocytosis. Abdominal ultrasound remains a fundamental examination in the exploration of acute abdomens. Its sensitivity would be less than that of CT in the diagnosis of acute appendicitis [10]. The inaccessibility of emergency CT scans led us to perform abdominal ultrasound in 1273 patients, i.e. 82% of cases. It was normal in 10% of cases. It showed direct signs of acute appendicitis in 64% of cases, indirect signs of acute appendicitis in 15%. Acute appendicitis was uncomplicated in 1140 patients, i.e. 73% of patients. Macroscopically the appendix was catarrhal in 62% of cases (n=962). Complicated appendicitis was found in 412 patients or 27% of cases. Complicated forms were represented by appendicular plastrons (n=52 cases; 3%), appendicular abscesses (n=119; 8%) and peritonitis of appendicular origin (n=240; 17%). In our series the rate of complicated forms was lower than some authors who found a rate of complicated forms of 57% [4]. The lower frequency of complicated forms in our study is probably due to the early diagnosis. In fact, even though we do not have the most advanced imaging diagnostic tools, we relied on clinical examination. The clinical examination allowed us to look for spontaneous pain and tenderness in the right iliac fossa. All these clinical parameters allowed us to make the diagnosis of acute appendicitis.

In the series by El Khader et al, acute uncomplicated appendicitis benefited from an initial conservative medical treatment. This consisted of antibiotic therapy for three days [11]. Appendectomy was performed after failure of the medical treatment. According to Zhengyang et al, nonoperative management of acute uncomplicated appendicitis with antibiotics was associated with significantly fewer complications and shorter length of stay, but a higher relapse rate [12]. Apart from the appendicular plastron which required medical "cooling" treatment, appendectomy by laparotomy was our therapeutic attitude in all cases. We justify our therapeutic attitude by the non-negligible rate of relapse and complications related to the medical treatment. Also, medical treatment requires a certain diagnosis, hence the interest of an abdominal CT scan. As this is not available in emergency and given the low income of our population who cannot afford a CT scan in private facilities, appendectomy was our treatment of choice. In our context, this contributes to a chance factor for our patients and limits the occurrence of complications. The approach was the Mac Burney point for acute uncomplicated appendicitis. A median laparotomy under the umbilical was used for abscesses and peritonitis with abdominal cleansing and drainage. This approach is the most commonly used in sub-Saharan Africa

because very few teams have laparoscopic surgery equipment [3,13].

In a prospective randomized study by Kassi et al, early oral re-feeding after appendectomy for acute appendicitis did not result in more morbidity than conventional oral re-feeding [13]. In addition to reducing the length of hospital stay, it reduces the cost of management. In our study, the average length of hospitalization was two days, contrary to some authors [14-16] who found an average length of hospitalization much higher than ours. The short duration of hospitalization is the consequence of the application of early oral re-feeding as recommended by Kassi et al [13].

The operative morbidity observed in our study was 1.8% and dominated by wall suppurations. Several authors observed wall suppurations in their series in varying proportions [3,14,16]. This low morbidity rate in our series would be related to the antibiotic prophylaxis administered to all our patients and the absence of comorbidity in a predominantly young population.

Mortality was 0.1% in our study. This low mortality rate was the finding of other authors [14,15] contrary to Harouna and Coll who found a higher mortality rate. The absence of comorbidity in our study population could explain this lower mortality rate [16].

Conclusion

Acute appendicitis is a very common abdominal emergency. It is a condition that mainly affects adolescent and young adult males. Uncomplicated forms are the most frequent. The treatment of choice is surgical. The morbidity dominated by parietal suppuration can be reduced by a laparoscopic approach which has yet to be popularized.

Conflict of Interest Statement

The authors declare that they have no conflict of interest.

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