

Research Article

Diagnosis and Treatment of Acute Peritonitis in Douala (Cameroon)

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Abstract

Introduction: Acute peritonitis defined as inflammation or infection of the peritoneal serosa. Most often found in young male adults. The diagnosis is clinical and paraclinical. The management consists of medical resuscitation and the surgery itself. Our study aimed to study the epidemiological, diagnostic and therapeutic aspects in five hospitals in the city of Douala.

Patients and methods: A descriptive study was conducted from January 2015 to May 2020, including

patients of all ages and both sexes who presented with acute peritonitis in any clinical form, and who underwent surgery within one of our hospitals. We collected patients' parameters through a survey, from complete history to clinical examination, then followed them up from surgery to post-operative period. Gathered information was analyzed by stata15 (Statistical and Data).

Results: At the end of our study 400 patients were included for acute peritonitis, among 35 in prospective and 365 in retrospective. Acute peritonitis represented

the second digestive surgical emergency with 28% of all surgical emergencies. Our target population included 76% (n = 304) of men against 24% (n = 96) of women, observing a sex-ratio of 3.16. The mean age of the patients was 37 ± 13 years, with extreme values of 17 years and 70 years. Etiologically, leading pathologies were digestive peritonitis (77%, 308 cases), genital peritonitis (10%), Post operative peritonitis (8.25%) and post traumatic peritonitis obstruction (4, 75%). Most patients underwent surgery within 3-4 hours, and were routinely given intravenous fluids (normal saline, lactated ringers, dextrose), analgesia, and antibiotics before and after surgery. Laparotomy was the primary method used, and laparoscopy (3%) was dedicated to appendicular perforated peritonitis.

Conclusion: Acute peritonitis represents the second most frequent visceral surgical emergency (28%) after acute appendicitis in Douala. It's mainly affects young adult males. The care combines preoperative, surgery, and postoperative treatment.

Keywords: Peritonitis; Diagnosis; Therapeutic management; Douala

1. Introduction

Acute peritonitis is defined as inflammation or acute infections of the peritoneal serosa; most often secondary to perforation of a digestive organ and / or the spread of an intra-abdominal septic site [1]. It is a frequent surgical pathology involving a therapeutic emergency [2]. Peritonitis remains of greater concern in developing countries due to its high frequency, morbidity and mortality [5,6,9-11]. This is the prerogative of young adults in tropical countries unlike older people in the West; with male predominance and

a mean age of onset between 30 and 50 years [13,14]. The etiologies of this pathology also vary significantly between continents. [15-17]. The diagnosis is essentially clinical, but biological and radiological examinations play an important role in the treatment decision [18,19]. The management is multidisciplinary and combines, on one hand, surgical sterilization of the infectious site and pre, intra and postoperative medical care [20]. In Cameroon, studies on the subject have been carried out mainly in Yaounde and in the South-West [21,22]. We therefore found it important to conduct this study in Douala, in order to improve our epidemiological and diagnostic knowledge of this nosological entity and its treatment in this large city of the country.

2. Patients and methods

This was a descriptive study conducted from January 2015 to May 2020, in (medical structures of the city of Douala (General Hospital, Laquintinie Hospital, Military Hospital, Bonassama District Hospital and Deido District Hospital). Patients who were admitted and followed in the emergency departments, operating theaters and surgery of these different structures for acute peritonitis were included in the study. A pre-tested data collection sheet made it possible to collect the data concerning age, sex, clinical and paraclinical data, as well as the various treatments administered to patient These variables were processed using Stata software version 15.0 (Statistical and Data).

3. Results

During our study period 2,145 patients operated on for visceral surgical emergencies; Acute appendicitis (except appendicular peritonitis) represented the first digestive surgical emergency with 32.4% followed by acute generalized peritonitis with a frequency of 28.0%

(N = 600), followed by intestinal obstruction- 665 cases (26.4%) and finally abdominal trauma-285 cases (13, 9%). A total of 200 patients was excluded for not giving consent for the study. The male sex was the most affected with 76% (n = 304) of men versus 24% (n = 96) of women, with a sex ratio of 3.16. The average age was 37 ± 13 years, with extremes of 17 years and 80 years. The most represented age group was 20-49 years old.

The majority of patients (222 cases, 55.5%) were referred from another health structure. 42.7% went to the hospital on their own or were accompanied by a third party. 77.5% of the means of transport to the emergency room were non-medical. A good part of patients (41.50%) consulted between 3 and 5 days after the onset of symptoms, 32.5% arrived in the emergency room after 6 to 9 days and 12% consulted between 1 and 2 days.

The most frequent reason for consultation was abdominal pain, which was found in 100% of cases. Abdominal contracture was present in 95.0% of our patients (n = 349) and the digital rectal examination was painful in 87.25% of cases (349 patients).

A complete blood count was carried out in all our patients. In our study, 36.5% of patients presented with hyperleukocytosis. It was sometimes associated with anemia in 78.25% of our cases. The unprepared

abdomen was performed in 76 patients (19.0%) and showed pneumoperitoneum (in the form of an interhepatodiaphragmatic gas crescent), hydroaeric levels. In contrast, 284 patients (71.0%) were able to do abdominal ultrasound, revealing cases of pneumoperitoneum, appendicular abscesses, uterine perforations or pelvic abscesses.

Preoperatively, the patients received a treatment combining solutions (salt glucose, Ringer) with analgesics and antibiotics. All patients with a suspicion of diffuse peritonitis had an antibiotic regimen started in the emergency department. Most patients (79%) received a combination of ceftriaxone and metronidazole with or without gentamicin.

The laparotomy approach was the most used in 97% of cases and colioscopy in 3% of cases. The most frequently used incisions were the midline supra and subumbilical and xypho-pubic incisions straddling the umbilicus. Four groups of peritonitis were highlighted. Digestive peritonitis was predominant with 308 cases (77.0%) (Table 1).

Gastric-duodenal perforation and complicated appendicitis were the most common pathologies with 148 cases (37.0%) and 98 cases (24.5%), respectively. The surgical procedures were performed according to each etiology and are presented in table 2.

Group of peritonitis	Effective (n)	Percentage (%)
Digestive	308	77
Gynecological	40	10
Post operative	33	8.25
Post Traumatic	19	4.75
Total	400	10

Table 1: Groups of peritonitis

Pathology	Surgical procedures
Peptic perforation	Patch de Graham (73)
	Simple suture (56)
	Gastroplasty (2)
	Pyloroplasty (15)
	Bivagotomy- pyloroplasty (2)
Complicated appendicitis	Abscess drainage + Appendicectomy (87)
	Appendicectomy (11)
Non-traumatic intestinal perforation	Intestinal suture (28)
	Resection + anastomosis (77)
Post traumatic peritonitis	Simple intestinal suture (1)
	Ileostomy (5)
	Resection + anastomosis (4)
	Bladder suture (7)
	Arterial hemostasis (1)
	Foreign body abaltion + suture (1)
Gynecological peritonitis	Unilateral salpingotomy (8)
	Unilateral salpingectomy (8)
	Organ suture (16)
	Abscess drainage (8)
Post operative peritonitis	Abscess drainage (1)
	Organ suture (21)
	Abdominal toilet + drainage (11)

Table 2: Surgical procedures according to etiologies

Bacteriological examination was performed in 36 cases, the results revealed that the most found germ was Escherichia coli in 47.2% (N = 17). The antibiogram showed sensitivity mainly to aminoglycosides (Amikacin 38.8%: Gentamycin 33.3% and ciprofloxacin 33.3%). Postoperatively, the infusion of fluids was prescribed systematically in all patients. Saline 9/1000, glucose sera and Ringer Lactate were administered in 66.25%, (n = 265cases) and 2% (n = 8cases), respectively. The combination Ceftriaxone, Metronidazole and Gentamicin were the most used 67.7%, 85%, 97.5% (271 cases, 340 cases and 289 cases). The most commonly used analgesics were Paracetamol injection 1g 77%, Tramadol injection (51.5%), Acupan/ Nefopam 20mg/2ml injection (40.25%). A PPI was added therapeutically almost systematically (79 %), as well as low molecular

weight heparin (LMWH) in 62.6%.

4. Discussion

Over our study period, acute peritonitis represented 28% of visceral surgical emergencies; and thus constituted the second cause of visceral surgical emergencies. This value is close to those mentioned in the studies by Shanker in India, Kassegne et al. in Togo, Togo et al in Mali and Ouangre et al in Burkina Faso where acute peritonitis represented respectively 31.2%, 33.1% and 34.9% of visceral surgical emergencies [4,18-20]. This result is found by many, but who on the other hand place peritonitis at the forefront of indications for operation in digestive surgery [21,22]. Even higher rates were found in other series, like those of Harouna et al. in Niger (54.5%), Bio T et al. in Benin (66.2%) and Kambibé et al in

Burkina Faso (43.14%) [12,23,24]. On the other hand, it is clearly higher than that of Lorand I in France with a frequency of 3% and Hosoglu in Turkey with a value of 13.1% [5,25]. This difference could be linked on the one hand to a delay in consultation and diagnosis and on the other hand to the upstream management of the main ailments in question. In our series, 76% of patients were men and 24% were women, with a sex ratio of 3.16. This agrees with most African authors, who have observed that acute peritonitis mainly concerns adult males [5,26,27]. Other authors have described studies with a male / female ratio that varies between 2.4 and 6 significantly higher than ours. [24,28,29]. This could be explained by the elective frequency of peritonitis for males in our population. In the study carried out by Rakotomavo in Malagasy in 2012 revealed an average age of 37.4 ± 12.6 years [30]. The mean age of the patients was 31.1 ± 10 years in a study carried out in Mali by Dieng [8]. We agree with these authors because the average age in our series was 37 years, with the majority (35.50%) being between 30 and 39 years and extremes ranging from 17 to 80 years. On the other hand it was 23.2 years with extremes between 20 and 72 years in a series of Kambiré et al in Burkina Faso, of $20.8 \text{ years} \pm 16.1$ (range: 0-80 years) in that of Adamou and al and even 19.8 ± 16.9 years, in that of Sambo; values significantly lower than ours [12,21,29]. This difference could be explained by the fact that peritonitis is predominant in young adults in Africa. The most frequent reason for consultation was abdominal pain, which was found in 100% of cases. It was abrupt onset in 50.5% of cases. Abdominal pain was associated with vomiting in 66% of cases. It remains the dominant sign according to several authors [17,30]. The peritoneal syndrome, which manifests itself by an abdominal defense or contracture

performing the classic “wood belly” to which is added the “cry of the umbilicus” and the pain in Douglas's the pouch of Douglas on rectal examination was present in 95% of our patients. Ngo Nonga et al have found it in virtually all of their cases [16]. This rate is higher than Mallick's 71.4% in Guyana and Kunin's 20% in France [31,32]. The mechanism involved may be perforation or may be secondary to a general infection of the peritoneal cavity. The latter results to the release of cytokines responsible for the development of a systemic inflammatory syndrome, which can be complicated by life-threatening sepsis [16]. Preoperative treatment consisted mainly of the administration of analgesics (99% of cases), the institution of antibiotic therapy, and filling correcting the electrolyte disorders and hypovolaemia that patients presented on their arrival at the emergency room. Chichom et al. reported having used preoperative antibiotic therapy in almost all of their patients [17]. This preoperative treatment is necessary, even essential for the preparation of the patient for the operation, however, its duration must be limited in time to avoid the complications that could arise. Several authors explain that even postoperative complications and deaths are often due to the delay in the surgical intervention [33-36]. Because, whatever the case, the treatment of diffuse peritonitis is based on major elements: the elimination of the source of the infection, the reduction of bacterial contamination of the abdominal cavity, the prevention of persistence or recurrence. of intra-abdominal infection [37]. The surgical intervention allowed us to define the etiologies of the observed peritonitis. In our study, it emerged that peritonitis was divided into 4 large groups with digestive peritonitis in the lead (77%) followed by gynecological (10%), postoperative (8.25%) and finally, post traumatic peritonitis (4.75%). Peritonitis

by gastroduodenal perforation ranked first with 148 cases. The predominance of digestive peritonitis and especially of gastroduodenal perforations is reported by several authors [16,17,28,30,38]. Several other authors have found other causes as major etiology. This is the case of Sambo in Benin, Kassegne in Togo, Ouangre in Burkina Faso, for whom ileal perforation occupied the first place [4,19,21]. While in Central African Republic, appendicular AGP was the most common [39]. The predominance of acute peritonitis by gastroduodenal perforation in our study would be closely linked to an increased incidence of ulcer disease in our societies. In our series, we used the combination of beta-lactam and imidazole, possibly supplemented by an aminoglycoside (Ceftriaxone 1000mg+Metronidazole 500mg+Gentamicin 80mg). This treatment was subsequently modified and adapted according to the clinical course. These associations have been used by other authors. In appendicular peritonitis, appendectomy was performed in all our patients like other authors. In peptic perforation, simple sutures with or without omentum is the most used method in our study. This has been observed by several authors as well [17,21,37,40]. This could be explained by the fact that this technique would reduce the operative time sufficiently and also reduce the postoperative consequences [17]. For other organ perforation peritonitis, in addition to simple sutures, cases of the anastomosis and ostomies were performed in our series as in several other authors [21,41,42]. For gynecological peritonitis, hysterorrhaphy was performed mainly with peritoneal toilet was performed in 25% of patients with post abortion uterine perforation (n = 10); eight patients (20%) with post-pregnancy ectopic peritonitis had undergone unilateral salpingotomy with peritoneal toilet and 3 patients (7.5%) had undergone unilateral salpingectomy with

peritoneal toilet. These surgical procedures differ from author to author. Unlike ours who did not find cases of hysterectomy, Didace in 2019, found hysterectomy in 11.1% with adnexectomy in 33.3% [43]. Adamou et al. described 5.3% hysterorrhaphy with 21.1% unilateral adnexectomy, while for Fenomanana, hysterectomy was indicated in 12.7% and salpingectomy in 9.1% of cases [44,45]. It should be noted that the majority of patients benefited from abdominal washing, regardless of the surgical procedure used. It is important to point out that several authors continue not to use this technique; The principle of removing contamination is not questioned, but for some, aggressive washing can harm agents involved in peritoneal defense [46,47]. The postoperative antibiotic therapy consisted mainly of Ceftriaxone, Metronidazole and Gentamicin. These antibiotics, used in different combinations, have been prescribed in several series and their efficacy has been proven by some authors such as Adamou et al, Mikamo et al, and Bae et al [43,48,49]. However, the prescription of antibiotic therapy postoperatively must be adapted to the antibiogram.

5. Conclusion

Acute peritonitis is the second most frequent visceral surgical emergency with a frequency of 28% after acute appendicitis in Douala. It mainly affects young adult males (76% of cases). Clinical diagnosis is based on the presence of peritoneal syndrome and is correlated with biology and imaging. This peritonitis is still dominated by those caused by organ perforations and mainly gastroduodenal perforation. The care combines preoperative, surgery, and postoperative treatment.

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