

# Acute Peritonitis at the CSRef of the Commune I in the District of Bamako: Signs, Diagnosis and Treatment

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## Abstract

Acute generalized peritonitis is an acute inflammation of the peritoneum. It is most often secondary to perforation of the digestive organ and/or the spread of an intra-abdominal septic focus. The absence of a study on peritonitis in a reference health center motivated us for this work. The aim of this study was to study the inadequacies that could be seen in the management of peritonitis in the CSRef(s). We carried out a retrospective study of 40 patients received at the CSRéf of commune I for acute generalized peritonitis from 2011 to 2012. The average age was 30.1 years with a standard deviation of 3.4; extremes ranging from 14 years to 60 years and a Sex ratio = 1.22 (22 men out of 18 women). Abdominal pain was the main reason for consultation (present in all our patients). In most cases, clinical examination alone made it possible to make the diagnosis. Surgical treatment depended on the etiology (appendectomy associated with washing-drainage was the most commonly performed surgical procedure). All our patients received general anesthesia. The average length of hospitalization was 7 days with extremes ranging from 1 to 15 days. We noted a Morbidity rate of 22.5%, dominated by wall abscesses and a mortality of 2.5%. The delay in consultation and referrals constitutes a factor in mortality and high morbidity.

## Keywords

Peritonitis, Surgery, Csref CI, Bamako Mali

## 1. Introduction

Acute generalized peritonitis is an acute inflammation of the peritoneum. It is

most often secondary to perforation of digestive origin and/or the spread of an intra-abdominal septic focus [1]. It is a common surgical pathology requiring therapeutic urgency [2]. Peritonitis ranks 3rd among digestive surgery emergencies in Africa after occlusions and acute appendicitis [3] [4].

In the USA: Mortality was 48% among children [5].

IN ASIA: The prognosis: 70% to 80% death in the event of multi-organ failure during the operation [6].

In France: Peritonitis was due to sexually transmitted infections, 80% of which were caused by *Neisseria gonorrhoeae* [7].

In Germany: 58% deaths in 36 patients with severe peritonitis [8].

In Africa: Frequencies varied from 28.1% in Congo to 49% in Niger in 2005 and 2006 with a mortality of 20.98% and morbidity of 49% [9] [10].

In Burkina Faso: The late arrival of patients at hospital, coupled with long and complex interventions, contributed to an increase in mortality [9].

In Tunisia: Patients with risk factors (age over 65 years; associated defects; signs of shock) must benefit from a simple and rapid surgical procedure [10].

In Mali: The poor prognosis of peritonitis was due to the delay in treatment and the practice of traditional medicine [11].

The prognosis can be improved by urgent and multidisciplinary care, combining early diagnosis, emergency exploratory laparotomy and early and appropriate resuscitation [4]. The prognosis depends on age, etiology, and time to diagnosis [2]. The diagnosis of acute peritonitis is essentially clinical. In case of doubt, radiological examinations can help with the diagnosis.

Treatment is medico-surgical, combining resuscitation and antibiotic therapy [2]. Nowadays, laparoscopy plays an important role in the diagnostic and therapeutic management of peritonitis [3].

To date, no study on generalized acute peritonitis in a second level health service in the Republic of Mali has been carried out. The choice of patients was not accidental since we do not have an intensive care unit despite the presence of a general surgery department.

## 2. Research Methodology

This was a retrospective study which took place in the general surgery unit at the CSRéf of commune I in the district of Bamako, over a period of two years from January 2011 to December 2012. We identified 45 cases of acute peritonitis of which 40 files were usable and complete. To assess pain we used the simple visual scale (EVS).

Inclusion criteria: All patients admitted to the general surgery department for acute peritonitis whose diagnosis was confirmed intraoperatively were included in the study.

Non-inclusion criteria: Were not included in this study:

1) Patients whose clinical and paraclinical examinations have not revealed signs of peritonitis, 2) Patients operated on for an indication other than genera-

lized peritonitis, 3) Patients operated on for localized peritonitis.

The variables studied were sociodemographic (age, sex, profession, residence); physical examination (general, functional, physical signs); additional examinations (ultrasound, x-ray of the abdomen without preparation); emergency biological assessment (Hemoglobin level, Hematocrit, Rhesus group, TP, TCK, Blood sugar) and surgical treatment: technique and short and medium term operative consequences.

The supports used were the patients' medical files, the outpatient consultation and hospitalization registers, recording the patients' reports, the individual investigation sheet and the anesthesia protocol.

Data entry and analysis were carried out using Epi-info version 6.5 software; word processing on SPSS software version 17 and Microsoft Word 2010. The comparison tests used are  $\chi^2$  and  $P < 0.05$ .

### 3. Results

Forty files of acute peritonitis ( $N = 40$ ) were collected representing a frequency of 1.8% of consultations, 4.81% of hospitalizations ( $N = 831$ ), 16.52% of surgical emergencies ( $N = 242$ ) and 11.73% of surgical interventions ( $N = 341$ ).

In 2012; 57.5% of patients were operated on and 42.5% in 2011. The age group of 14 to 25 was the most represented with 50% of cases. The average age was 30.1 years with a standard deviation of 12.04 years. The extreme ages were 14 and 60 years. The sex ratio was in favor of men, *i.e.* 1.22. 72.5% of our patients resided in Bamako, housewives represented 22.5% of cases. Patients received urgently represented 55% of cases. (**Table 1**) Abdominal pain was the reason for consultation in 90% of cases. This pain was stinging and burning in 50% and 40% respectively. The mode of onset of pain was progressive and sudden in 57.5% and 42.5% of cases. (**Table 2**)

All patients had generalized abdominal pain, permanent in 72.5% of cases, lasting more than 2 days in 95% of cases and accompanied by fever (87.5% of cases), vomiting (85% of cases), nausea (70% of cases). The factors triggering the pain were absent in 77.5% of cases; the pain was calmed by analgesics in 32.5% of cases. (**Table 3**)

Body temperature was elevated in 50% of cases. The respiratory rate was normal in 95.5% of cases. The coloring of the conjunctiva was good in 90% of cases; the tongue was saburral in 50% of cases; Abdominal contracture 97.5%; Abdominal defense in 87.5%; Navel cries in 97%; Abdominal dullness 95%; Abdominal pain on palpation 87.5%; Abdominal tympanism 5% of cases; Abdominal mass 5% of cases. The Douglas cul de sac was bulging and painful in 95% of cases. (**Table 4**)

Abdominal ultrasound was performed in 60% of our patients. The bacteriological examination was in 17.5% of which 12.5% had germs of the genus: *E. coli*, *K. pneumoniae*, *P. aeruginosa*, Tuberculosis bacillus (*Mycobacterium tuberculosis*).

**Table 1.** Sociodemographic data.

Sociodemographic data		Effective	Percentage
Age	15 years to 25 years	20	50
	26 years to 35 years	8	20
	36 years to 45 years	5	12.50
	46 years and over	7	17.50
Sex	Male	22	55
	Feminine	18	45
Occupation	Household	9	22.50
	Trader	6	15
	Breeder	1	2.50
	Artisan	5	12.50
	Farmer	1	2.50
	Pupil	9	22.50
	No occupation	9	22.50
Origin	Bamako	29	72.50
	Outside of Bamako	11	27.50
Total		40	100

**Table 2.** Distribution of patients according to mode of admission and level of education.

Admission method and level of education		Effective	Percentage
Admission method	Emergency	22	55
	Referred	16	40
	Ordinary consultation	2	5
Educational level	Primary	13	32.50
	Secondary	3	7.50
	Superior	2	5
	Koranic school	1	2.50
	Uneducated	21	52.50
Total		40	100

Appendiceal perforations represented 52.5% of surgical indications; gastric perforation 12.5%; intestinal perforation 10%; peritonitis of gynecological origin 22.5% and peritonitis of tuberculous origin 2.5% of cases. (**Table 5**)

The incision made was the midline above and below the umbilical in 47.5% of cases. The peritoneal fluid was pus in 87.5% of cases; stools in 10% of cases and tuberculous granuloma in 2.5% of cases. The surgical techniques used were

**Table 3.** Distribution of patients according to reason for consultation and accompanying signs.

Reason for consultation/Accompanying signs		Effective	Percentage
Reason for consultation	Abdominal pain	<b>36</b>	<b>90</b>
	Fever	2	5
	Abdominal meteorism	2	5
Accompanying signs	Vomiting	<b>34</b>	<b>34/40</b>
	Fever	<b>35</b>	<b>35/40</b>
	Nausea	28	28/40
	Constipation	1	1/40
	Recectorgia	1	1/40
	Cold sweat	13	13/40
	Total	40	100

**Table 4.** Distribution of patients according to pain characteristics.

Pain characteristics		Effective	Percentage
Type of pain	Sting	<b>20</b>	<b>50</b>
	Burn	16	40
	Twist	2	5
	Gravity	1	2.50
	Crushing	1	2.50
Mode of onset of pain	Progressive	<b>23</b>	<b>57.50</b>
	Brutal	17	42.50
Evolution of pain	Permed	<b>29</b>	<b>72.50</b>
	Intermittent	10	25
	Undetermined	1	2.50
Pain irradiation	Posterior	4	10
	Ascendant	3	7.50
	FID	21	52.50
	Umbilical peri	<b>39</b>	<b>97.50</b>
	Epigastric	17	42.50
	Generalized	<b>40</b>	<b>100</b>
	Without irradiation	30	75
Duration of pain	1 to 2 days	2	5
	>2 days	<b>38</b>	<b>95</b>
Total		40	100

**Table 5.** Distribution of patients according to accompanying signs and triggering factor.

Associated signs and triggering factor	Effective	Percentage	
Associated signs	Vomiting	34	85
	Fever	35	87.50
	Nausea	28	70
	Constipation	1	2.50
	Rectectorgia	1	2.50
	Cold sweat	13	32.50
Triggering factor	Meal	2	5
	Hunger	1	2.50
	Stress	4	10
	Effort	2	5
	None	31	77.50
Total	40	100	

**Table 6.** Distribution of patients according to physical signs.

Physical signs	Number	Percentage
Generalized contracture	39	97.50
Pain on palpation	35	87.50
Decreased abdominal breathing	37	80
Abdominal silence	30	75
Abdominal meteorism	5	12.50
Abnormal dullness	38	95
Localized defense	30	87.50
Tympanism	2	5
Cry of the navel	39	97.50
Painful rectal exam with bulging Douglas	38	95
Painful vaginal touch	15	37.50
Abdominal mass	2	5
Foul leucorrhoea on TV	15	37.50

appendectomy 52.5%; ileostomy 10%; reviving and suturing digestive perforations 32% of cases. End-to-end anastomosis was performed in 10% of cases. (Table 6)

The antibiotics used were ceftriaxone 1 g, metronidazole infusion, gentamicin 80 mg in all our patients. The analgesics were injectable analgin, injectable paracetamol, acupan 20 mg and or injectable trabar 100. Salt serum, Ringer lactate, 5% glucose serum were used for rehydration. One patient was transfused.

**Table 7.** Distribution of patients according to paraclinical diagnosis, bacteriology result and ASA classification.

Dg. Paraclinical/Bacteriology/ASA		Effective	Percentage
Ultrasound	Not done	16	40
	Done	<b>24</b>	<b>60</b>
Abdomen without ASP preparation	Hydro-aerial levels	3	7.50
	Diffuse grayness	1	2.50
Bacteriology	Presence of germs	<b>35</b>	<b>87.50</b>
	No germs	5	12.50
ASA I		<b>38</b>	<b>95</b>
ASA II		2	5
Total		40	100

**Table 8.** Treatment and early operative outcomes.

Treatment and early post-operative outcomes		Effective	Frequency
Approaches first	Median above and below umbilical	19	47.50
	Subumbilical Median/Expanded Mac Burney	<b>21</b>	<b>52.50</b>
Operating technique	Appendectomy	<b>21</b>	<b>52.50</b>
	Ileostomy	2	5
	Suturing the perforation	13	32.50
	End-to-end anastomosis	4	10
Aftermath of surgery	Simple	<b>35</b>	<b>87.50</b>
	Parietal suppuration	4	10
	Death	1	2.50
Total		40	100

Subumbilical laparotomy was the most practiced, *i.e.* 52.50% of cases. Appendectomy was the most performed, *i.e.* 52.50% of cases. The postoperative course was simple in 87.50%; ISO in 10% of cases.

The early operative consequences were: wall suppuration 10% of cases, death 2.5% of cases, simple sequel in 87.5% of cases. The duration of hospitalization was between 4 to 7 days in 80% of cases. Late operative outcomes (one month or more) were simple in 97.5% of cases. (**Table 7**, **Table 8**)

#### 4. Discussion

The classification of files by year and by pathology in the department allowed us to easily collect the data on the survey form. Difficulties were encountered during this work, namely: abdominal x-rays without preparation, abdominal ultrasound not possible urgently within the health structure (place of study) and in-

sufficient purchasing power of certain patients for correct care. Quests were often carried out with nursing staff to ensure postoperative care.

Acute generalized peritonitis plays an important role in emergency abdominal pathology. The frequency of acute generalized peritonitis is high in Africa (20% to 28.8%) [11]-[16]. The frequency of the African series is higher than that of I. Lorand who had 3% of generalized acute peritonitis in France [17] [18] ( $P = 0.005$ ). This difference could be linked to the high frequency of infectious diseases and the delay in consultation in Africa.

The average age in our study was 30; 1 years. The African population is young but subject to several pathologies (appendicitis, peptic ulcers and sexually transmitted infections in young women). This average age is comparable to that of Konaté H. in Mali, 24 years with  $P = 0.67$ ; Harouna Y.D. in Niger, 23 years with  $P = 0.5$  [17] and Ramachandran C. S. in India, 32 years with  $P = 0.94$  [6] but statistically different from that of Cougard P. in France, 48 years  $P = 0.0023$  [19].

Several studies have reported that peritonitis occurs more frequently in men than in women [20] [21] [22]. This aspect was found in our study, although gender was not a risk factor. The sex ratio is 1.22 men for 1 woman. It does not differ statistically from that of Dembélé B. in Mali,  $P = 0.56$  [21], Hosoglu in Turkey  $P = 0.62$  [20] and Doui D. in CAR with  $P = 0.67$  [22] [23] [24] [25].

Pain was found in all our patients and as in other authors [3] [8] [16] [26]. Intense, continuous pain with sudden onset was the most constant symptom [15] [23] [24]. The other characteristics of the pain (site, irradiation and type) had a diagnostic orientation value and abdominal contracture is the major physical sign [11] [14]. Vomiting (53% of cases) of food, bile or faecal matter was more frequent in the series by Kunin N. in France (1991), 81% with  $P = 0.006$  [15] and by Akgun Yen Turkey (1995), 70.4% with  $p = 10^{-6}$  [23]; reflecting paralytic ileus responsible for dehydration and hydro-electrolyte disorders. Early or late cessation of materials and gases (26% of cases) was found in 22% of cases in Sidibé Y. [13] ( $P = 0.16$ ) and initial diarrhea [12]. The usually high fever has been described in the literature [5] [6] [17].

The diagnosis of acute generalized peritonitis is primarily clinical in the face of abdominal contracture [11] [14] (97.5% of cases in our series), generalized defense [2]. The rate varies between 20.8% and 31% according to the literature [6] [9] [17] [25]. This difference could be linked to etiologies and delays in consultation. Our rate was comparable to those of Konaté H. in Mali in 2001  $P = 0.001$  [14] and Kunin N. in France in 1991  $P = 0.0025$  [15]. Additional examinations (ASP, medical imaging and biology) help with diagnosis but should not delay surgical treatment. At the ASP (10% of our patients), pneumoperitoneum was observed in 2.5% of cases; this rate varies between 8% and 71% in the literature [9] [17] [26]. This difference could be linked to etiology. The absence of this pneumoperitoneum does not eliminate digestive perforation [13] [18] because the hollow organ may be empty of gas and the perforation is obstructed. The



hydro-aerial levels (7.5% of our patients), this result differs statistically from the 82% of Sidibé Y. in Mali [11]; of Cougard P. in France [18] and the 24% of Harouna Y. D. in Niger [17]. This difference is mainly linked to the progression of the disease.

Ultrasound performed in 17 of our patients revealed peritoneal effusion in 35.29% of patients. This result is comparable to the 75% of Sakhri J. in Tunisia (P = 0.56) [10].

Intraoperative peritoneal fluid collection was systematic in all our patients, but we only had the result in 9 cases. Most interventions are carried out at night and most often on weekends, periods during which the laboratory is not open. *Escherichia Coli* was the most frequently encountered germ. This corroborates with that of KOUAME B. from Ivory Coast in 2001 [14] and J.Y. MARITANO in France in 2001 [2].

The therapeutic approach to acute generalized peritonitis depends on the intraoperative diagnosis. Appendectomy was the most commonly performed surgical procedure in our series, *i.e.* 52.5%. This is understandable because peritonitis due to appendiceal perforation represented the most frequent etiology (depending on the mechanism). Our rate is different from that of SIDIBE Y. 50% (P = 0.59) [11]. Suture excision of the edges of the perforation is particularly effective for single, rounded or punctiform perforations seen early [15].

Wall suppuration (10%) was the most frequent complication, varying between 17% and 27% in African series [8] [11] [13]. This difference could be linked to the size of the sample and the progressive stage of the disease [3]. Mortality (2.5% in our series) varies between 11.11% and 15.70% in African series [11] [12] [17]. These rates were lower than that of Cougard P. [18] (P = 0.035) where duodenal perforations dominate. The main prognostic factors in the African series would be the delay in treatment and the lack of early diagnostic means. The causes of death in our study (septic shock) have been reported by other authors [6] [15].

## 5. Conclusions

Acute generalized peritonitis is a common condition in developing countries and mainly affects young people.

Appendiceal perforation remains the primary cause, *i.e.* 21 cases out of 40 cases. Reference conditions; financial constitute different parameters which influenced the prognosis of referred patients.

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## Conflicts of Interest

There is no conflict of interest.

## References

- [1] Proske, J.M. and Franco, D. (2005) Péritonite Aigue. *La Revue du Praticien (Paris)*, **55**, 2167-2172.
- [2] Jean, Y.M. and Jean, L.C. (2001) Péritonite Aigue. *La Revue du Praticien (Paris)*, **51**, 2141-2145.
- [3] Alamowitch, B. (2000) Traitement laparoscopique de l'ulcère duodénal perforé. *Gastroentérologie Clinique et Biologique (Paris)*, **24**, 1012-1017.
- [4] Rabii, R., Rais, H., Harti, A., Barrou, L., Sarf, I., Joual, A., et al. (1999) Péritonite secondaire à la rupture spontanée d'une pyonéphrose au cours d'une grossesse: A propos d'un cas. *Annales d'urologie*, **33**, 31-35.
- [5] Grosfeld, J.L., Moinari-Chaet, M., Engum, S.A., et al. (1996) Gastro-Intestinal Perforation and Peritonitis in Infants and Children. *Surgery*, **120**, 650-655.  
[https://doi.org/10.1016/S0039-6060\(96\)80012-2](https://doi.org/10.1016/S0039-6060(96)80012-2)
- [6] Ramachandran, C.S. and Agarwal, S. (2004) Laparoscopic Surgical Management of Prerogative Peritonitis in Entries Fever: A Preliminary Study. *Surgical Laparoscopy, Endoscopy & Percutaneous Techniques*, **14**, 122-124.  
<https://doi.org/10.1097/01.sle.0000129387.76641.29>
- [7] Brunel, A.S., Fraisse, T., Lechiche, C., Sotto, A. and Laporte, S. (2008) Une péritonite sexuellement transmise. *Médecine et Maladie Infectieuse*, **38**, 233-234.  
<https://doi.org/10.1016/j.medmal.2008.01.001>
- [8] Giessling, U., Petersen, S., Freitag, M., et al. (2002) Surgical Management of Severe Peritonitis. *Zentralblatt fur Chirurgie*, **127**, 594-597.  
<https://doi.org/10.1055/s-2002-32839>
- [9] Sanou, D. (1999) Les perforations iléales d'origine typhique: Difficulté diagnostique et thérapeutique (à propos de 239 cas). *Burkina Medical*, **1**, 17-20.
- [10] Sakhri, J. (2000) Traitement des ulcères duodénaux perforés. *La Tunisie Médicale*, **78**, 494-498.
- [11] Dembele, M. (1974) Perforations typhiques de l'intestin grêle: A propos de 16 cas. *Médecine d'Afrique Noire*, **21**, 3.
- [12] Ongoiba, N. (1984) Contribution l'étude épidémiologique et clinique des péritonites aiguës dans les hôpitaux de Bamako et Kati. Thèse Méd., Bamako, n°24.
- [13] Sidibe, Y. (1996) Les péritonites aiguës généralisées au Mali: A propos de 140 cas opérés dans les hôpitaux de Bamako et Kati. Thèse Méd Bamako, n°1.
- [14] Konate, H. (2001) Abdomens aigus chirurgicaux dans le service de chirurgie générale et pédiatrique au CHU Gabriel TOURE. Thèse Méd Bamako, n°67.
- [15] Kunin, N. and Letoquard, J.P. (1991) Facteurs pronostics des péritonites du sujet âgé: Analyse statistique multifactorielle de 216 observations. *Journal de Chirurgie (Paris)*, **128**, 481-486.
- [16] Roseau, G. and Marc, F. (1989) Abdomen aigu non traumatique en dehors de la période postopératoire. *Encycl. Méd Chir. (Paris-France) Estomac-Intestin*, 9042A10, 2: P8.
- [17] Harouna, Y.D. (2001) Deux ans de chirurgie digestive d'urgence à l'hôpital national de Niamey (Niger): Etude analytique et pronostique. *Médecine d'Afrique Noire*, **48**, 1-6.
- [18] Lorand, I. and Malinier, N. (1999) Résultats du traitement coelioscopique des ulcères perforés. *Chris Paris*, **124**, 149-153.  
[https://doi.org/10.1016/S0001-4001\(99\)80057-9](https://doi.org/10.1016/S0001-4001(99)80057-9)

- [19] Cougard, P. and Malinier, N. (2000) Le traitement laparoscopique de l'ulcère duodénal perforé. Résultats d'une étude rétrospective multicentrique. *Annales de Chirurgie*, **125**, 726-731. [https://doi.org/10.1016/S0003-3944\(00\)00267-4](https://doi.org/10.1016/S0003-3944(00)00267-4)
- [20] Hosoglu, S., Mustafa, A., *et al.* (2004) Risk Factors for Enteric Perforation in Patients with Typhoid Fever. *American Journal of Epidemiology*, **160**, 46-50. <https://doi.org/10.1093/aje/kwh172>
- [21] Dembele, B. (2005) Etude de la péritonite aigue généralisée dans le service de chirurgie générale et pédiatrique à l'hôpital Gabriel TOURE. Thèse Méd Bamako, N°25.
- [22] Doui, D., *et al.* (2008) Les péritonites aigues généralisées opérées dans les hôpitaux de Bangui. Etiologies et profil bactériologique à propos de 93 cas. *Semantic Scholar*, **55**, 617-622.
- [23] Akgun, Y. (1995) Typhoid Enteric Perforation. *British Journal of Surgery*, **82**, 1512-1513. <https://doi.org/10.1002/bjs.1800821120>
- [24] Sissoko, F., Ongoiba, N., Berete, S., *et al.* (2003) Le péritonites par perforation iléale en chirurgie « B » de l'hôpital du Point G. *Mali Médical*, **18**, 22-24.
- [25] Kouame, B. (2001) Aspects diagnostiques, thérapeutiques et pronostiques des perforations typhiques du grêle de l'enfant à Abidjan, Côte d'Ivoire. *Bulletin de la Société de Pathologie Exotique*, **94**, 379-382.
- [26] Büchler, M.V. (1997) Chirurgische Therapie der diffusen peritonitis: Herdsanierung und intraoperative extensive Lavag. *Der Chirurg*, **68**, 811-815. <https://doi.org/10.1007/s001040050276>