



**EVALUATION OF THE RATE OF MORTALITY RELATED TO THE
SURGICAL MANAGEMENT OF PERITONITIS AT THE REGIONAL
HOSPITAL OF NGAOUNDERE (Cameroon)**

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ABSTRACT

Peritonitis is defined as an inflammation of the serosal membrane that lines the abdominal cavity and the organs contained therein. It is a medico-surgical emergency. The objective of this study was to determine the mortality rate related to peritonitis at the Regional Hospital of Ngaoundéré (RHG). As such, we carried out a cross-sectional retrospective study for a period of 10 years going from January 1st 2007, to December 31st 2016. We included all admitted patients diagnosed of an acute peritonitis; and collected the following variables: socio-demographic variables, clinical variables and therapeutic care management data. Results obtained from overall 171 enrolled patients reveals that, 71% of the patients were of the male sex and 29% female with a sex ratio of 2.42 in favor of men. Patients mean age was 28.98±15.53 years. The etiologies that dominated the sample were gastric perforations (24.5%) and appendicular perforations (22%). The rate of mortality obtained was 14.02%. Peritonitis accounted for 15.7% of abdominal emergencies in this study.

Key words: mortality, peritonitis, regional hospital of Ngaoundéré

INTRODUCTION

Affecting all ages and social categories, the diagnosis of peritonitis is clinical. However, peritonitis still records a high rate of morbidity and mortality despite of the great scientific progress nowadays [4]. The prognostic depends on the cause, metabolic tares and the precocity of the treatment [5]. The mortality of appendicular peritonitis that affects frequently young subjects is less than 10%, whereas, diverticular peritonitis and post-operative peritonitis attains 40% [6]. In spite of the efforts in studies carried out by several authors in this domain and consented efforts of the unit departments of surgery and intensive care units, peritonitis remains a terrible situation with its elevated mortality rate [7]. Peritonitis occupies the third position of abdominal pathologies after appendicitis and intestinal occlusions [8]. Most African authors that focused on this pathology obtained variable frequencies lying between 19% and 28.8% whereas, Hay in France obtained a frequency of 7% in 1989[9]. On the other hand, ADESUNKANMI in Nigeria in 2003 reported a mortality rate of 11.6% in population of children [10]. ADAMOUE and al; in Niger at the Zinder National Hospital obtained a mortality rate of 16.9% [11]. In Burkina Faso, COULIBALY in 2010 recorded a mortality rate of 4.9% [12]. The management of peritonitis associates reanimation measures and the surgical eradication of the intra peritoneal infectious site without forgetting a well-adapted prolonged therapeutic antibiotic. We estimate that a delay in the management of peritonitis is a factor of bad prognostic [13, 14]. In view, of what precedes, and in the absence of such study in the Regional Hospital of Ngaoundéré, we decided to focus on peritonitis so as to participate in the amelioration of its management and to reduce rate of mortality related to the pathology.

OBJECTIVES

The general objective of this study was to determine the mortality rate related to the surgical management of peritonitis at the regional hospital of Ngaoundéré and specifically to:

- Determine the socio-demographic characteristics of patients;
- Determine the etiologies of peritonitis;

- Describe their means of management at the hospital.

METHODOLOGY

1- Study Design And Setting

We carried out a retrospective cross-sectional study at the regional hospital of Ngaoundéré (Adamawa region of Cameroon) going from the period of January 1st 2007, to December 31st 2016 either a duration of 10 years.

2- Study Subject And Sample

The population of study included the patients of the surgical unit department with a diagnosis of peritonitis who underwent surgery whereas those who were not included to this study concerned patients who died of peritonitis without being operated and patients files that could not be exploited. The sampling was non-probabilistic as such all the registers of the services of surgery, emergency and reanimation were consulted. Direct counting was realized using patient's identity so as to avoid bias in enrolling the same patient several times.

3- Statistical Data Analysis

The treatment of data was made possible by the software Microsoft Office for deriving tables and figures. Besides, the software Sphinx Plus Version 4.0 helped us to record the data in the computer. The different variables in relationship with the objective of the study was taken into account.

RESULTS

From obtained result analysis, we observe two pics corresponding to years where the cases of peritonitis was very high, that is the year 2010 and 2014 with respectively 28 and 24 cases recorded. The average frequency per year was 17.10%.

1- Socio-demographic data

a- Sex distribution

Out of the 171 cases recorded, men stood for 121 cases for 50 women. The male predominance was noted in this sample with 71% for a sex ratio of 2.42 still in favor of men.

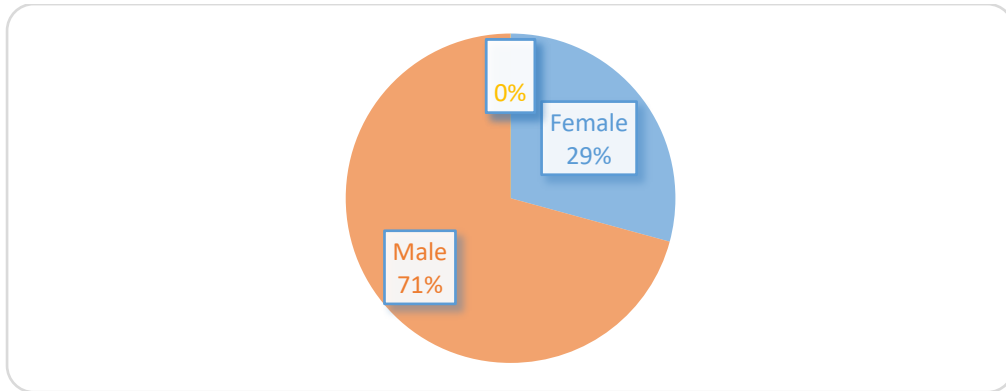


Figure 1: patients' distribution following sex

b- Age distribution

The most represented age group was that of [20-29] years with a percentage of 34.5% and the least represented age group was that of [0-10] years with a percentage of 0.7%. The mean age of the sample was 28.98±15.53 years with extremes at 3 years and 74 years.

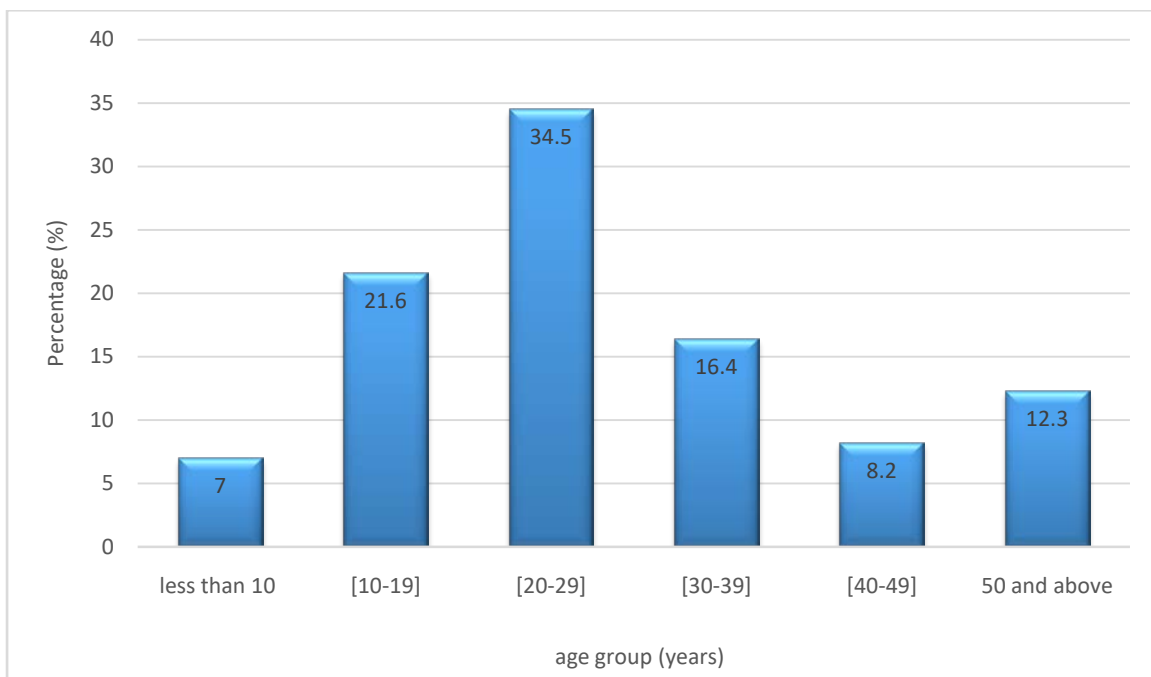


Figure 2: distribution of patients following age

2- Distribution of patients following etiologies (per operative diagnosis)

Gastric perforation was the most frequent etiology encountered with a frequency of 45 cases either 24.7%.

Table 1: distribution of patients following etiologies

Etiologies	Number (n)	Frequency (%)
Gastric perforation	45	24,5
Appendicular Perforation	40	22,0
Ileal Perforation	30	16,5
Other causes	24	13,2
Caecal Perforation	14	7,7
Perforation of the small intestine	13	7,1
Perforation of the antrum	8	4,4
Intestinales Occlusion	4	2,2
Tuberculous Peritonitis	2	1,1
Post-operative peritonitis	2	1,1
Total	182	100

3- Surgical treatment

Bowel resection represented 31.6% of the surgical procedure either 54 patients who underwent this resection followed by simple stitch of gastric ulcer in 24.6% of the cases either 42 patients.

Table2: patients' distribution following surgical treatment

Treatment	Number (n)	Frequency(%)
Non determined	7	4,1
Digestive resection and anastomosis	54	31,6
Simple Suture of ulcer	42	24,6
Appendicectomy	39	22,8
Others	17	9,9
Drainage	9	5,3
Peritoneal Toilette	3	1,8
Digestive resection and stomia	0	0
Total	171	100

4- Post-operative complications

We recorded anemia and fever as complications in 8 patients only, besides no record of any complication was mentioned for 147 patients.

Table 3: postoperative complication

Complications	Number (n)	Frequency(%)
Anemia	8	4,62
Dehydratation	2	1,16
Cardiacarrest	1	0,58
Ascitis	1	0,58
Bradycardia	1	0,58
Hypotension	1	0,58
Hypertension	3	1,73
Respiratoryinsufficiency	1	0,58
Fever	6	3,47
Thyphoid Fever	2	1,16
Malaria	2	1,16
Occlusion	2	1,16
Non determined	147	82,66
Total	171	100

5- Post-operative evolution

We recorded 14% of unfavorable cases (death) and 86% of favorable evolution towards health recovery.

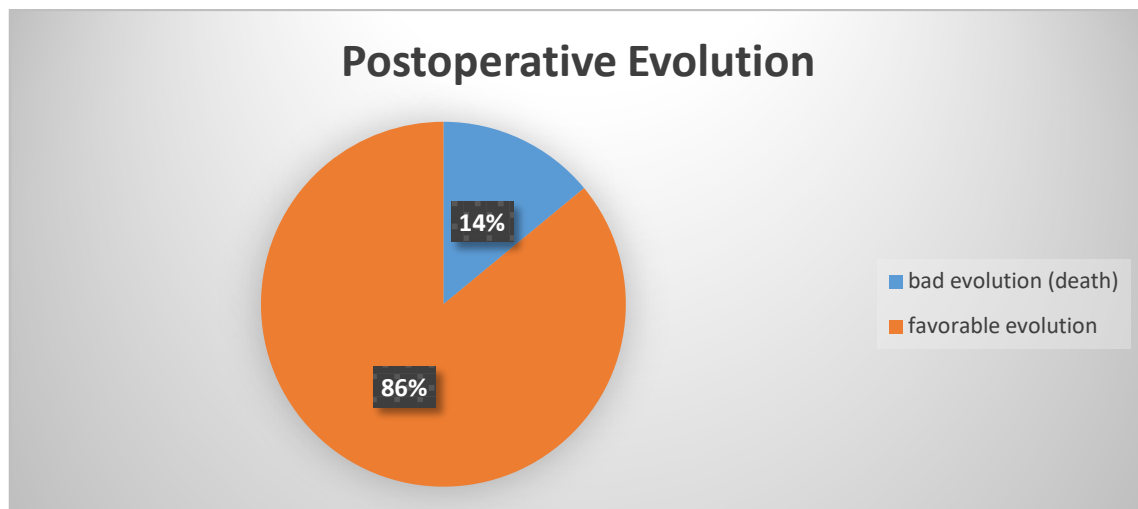


Figure 3: evolution of patients

DISCUSSION

1- Epidemiology

a- Frequency of peritonitis

In the course of this study, we identified 1134 acute abdomens among which peritonitis accounted for 178 cases with a percentage of 15.7%. It occupies the third position among abdominal emergencies. This rate of 15.7% is comparable to that of SANOU of Ouagadougou in 1991 [15] who obtained 17.10%. Nevertheless, this rate is less than that observed by ONGOIBA and al.; [16] and AYITE and al.; where they respectively obtained 20.1% and 25.4% in their studies.

African authors DEMBELE [2] and BOUAGGAD [18] obtained frequencies of generalized peritonitis going from 7.4% to 19%. These rates are greater than that of LORAND and al.; [19] in France who reported a 3% rate in 1999. This difference may be as a result of the elevated infectious diseases rate generally present in Africa.

b- Age

The average age of our sample was 28.98 years with extremes at 3years and 74 years. In this study, we find out that, acute generalized peritonitis affects mostly the young adult with a peak value at the interval of [20-29] years. The following result is similar to that of DEMBELE [2] in Mali who obtained

a threshold age of 25.8 years in his study, but also different from that of COUGARD and al.; [21] whereby the mean age of the sample of study was 48 years in Europe; which may be a consequence of the ageing process nowadays observed in Europe. On the other hand, our results concords with other scientific publications [22,23] whereby the main population concerned with peritonitis is the young adult given that, African countries are mainly composed of youths compared to the ageing European population.

c- Sex

Male sex predominance was notified in many similar studies just as is the case in this study whereby the sex ratio is of 2.42 in favor of men. This ratio is quite similar to that of DISSA [24] who obtained a 3/1 ratio in 2012 in favor of men. KOUAME in 2001[25] and COUGARD [21] in 2000, reported that, peritonitis affects mostly men than women. Besides, CHICHOM-MEFIRE and al.; [26] in 2016 in Buea and Limbe obtained a sex ratio of 1.23. KAIS and al.; [27] attributed this difference to psychological factors and the elevated smoking rate in the male population.

2- Etiologies

Gastric perforation was the main etiology that dominated this study and 2 to 3 times frequent in men than women. Youths were the most affected [28]. Certain factors such as age greater than 60 years, bowel perforation of more than 48 hours, massive contamination of the peritoneal cavity, state of choc, existing metabolic tares, known evolutive ulcer of more than 6 months, are known to be risk factors of mortality related to peritonitis [30]. Thus, gastric perforation peritonitis in this study with 24.5% frequency approaches the results of BOUAGGAD [18] in Marrakech in 2001 and that of CHICHOM-MEFIRE [26] who reported in their studies that gastric perforation came first followed by appendicular peritonitis with a frequency of 22% rejoining the study of DEMBELE [2] in 2005 and DIENG [4] in 2006.

3- Treatments

Medical treatment consisted mainly of reanimation and correction of hydro electrolytes and a large spectrum antibiotic to limit infectious expansion and

prevent from septicemia. Surgery through laparotomy was systematic in this study. Intestinal (gap) closure was realized in 31.6% and sometimes associated to omentoplastia. But certain authors associated an etiologic treatment such as TRAORE [31] who realized a truncal vagotomy with pyloroplasty in 5 cases of peptic ulcer discovered within 24 hours.

4- Mortality

The mortality rate in this study was 14.02%. This rate is comparable to the 15.1% rate reported by CHICOM-MEFIRE [26]. This high mortality rate maybe as a result of late diagnosis as patients consult very late when already at an advanced stage and also the absence of a postoperative reanimation unit in the hospital of study. Moreover, delayed care management was the principal factor in charge of this mortality reported in most African studies. This delay mostly due to the absence of means and adequate plateau technique associated to poverty and the attachment to traditional medicine as well as auto-medication.

CONCLUSION

Peritonitis represented 15.7% of abdominal emergencies in this study. Two principal etiologies were identified: gastric perforation (24.5%) and appendicular perforation (22%). In this study, peritonitis affected mainly the young adult of less than 30 years. Laparotomy was the main surgical technique realized for the whole patients. The mortality rate was 14.02%, result still elevated in spite of the efforts of carried out in the domain of reanimations.

REFERENCES

- [1] Konate E.** Péritonites aiguës généralisées: Aspects thérapeutiques et pronostiques. Chirurgie générale de l'hôpital fousseyni Daou de kayes, thèse de médecine ;bamako, 2014.
- [2] Dembele B.** Etude des péritonites aiguës généralisées dans les services de chirurgie générale et pédiatrique de l'hôpital GABRIEL TOURE, thèse de médecine, Bamako, 2005

[3] **Harouna Y., Ali L., Seibou A., Abdou I., Gamatie Y., Rakotomala J., Habibou A., Bazira L.**, Deux ans de chirurgie digestive d'urgence à l'hôpital national de Niamey (NIGER) : Etude analytique et pronostique, vol. 2, n°148, 2001.

[4] **Dieng,M., Ndiaye A., Ai I., Konaté O., Ka M., Cissé A., Dia C., Touré T.**, «Etude des facteurs de morbidité et de mortalité des péritonites aiguës généralisées. A propos d'une série de 221 cas opérés.» Journal Africain de Chirurgie Digestive,vol. 7, n°2, pp. 679- 685, 2007.

[5] **Jean Y.M et Jean L.C**, Péritonite aiguë, Revue du Praticien, *Paris*, vol. 51, p. 2141 – 2145., 2001.

[6] **D'acremont B.**, Hépto- gastro- enterologie, paris, Masson, 1995, p.292.

[7] **Da Domeoune C.**, les peritonites aiguës generalisees:aspects epidemiologiques, cliniques et therapeutiques au CHNSS de bobo-dioulasso.(a propos de 369 cas), vol. 8, bobo-dioulasso: La lettre de l'infectiologue, 2002, pp. 284-291

[8] **Djibril B**, Etude des péritonites aiguës à l'hôpital Sominé Dolo de Mopti, thèse de medecine,Bamako, 2006, p. 105

[9] **Hay J.M**, «Epidémiologie des douleurs abdominales étude de l'ARC et l'AURC,» vol. 7, n° 118, pp.403-406, 1989.

[10] **Adesunkanmi A., R. A, Oseni, A. S Et E. Agbakwuru**, «Acute Generalized Peritonitis in African Children: Assessment of severity of illness using modified APACHE II Score.» ANZ Journal of surgery, vol. 73, n° 15, pp. 275-279, 2003.

[11] **Adamou H, Habou O, Magagi I A., Adamou A.M, Et Sani R**, Etiologies, traitement des péritonites aiguës à l'hôpital National de Zinder : à propos de 320 patients », Revue Africaine de Chirurgie et Spécialités, vol.10, n° 11, pp.12-18, 2 janvier 2016.

[12] **Coulibaly C.**, Péritonites aiguës généralisées au Service de chirurgie générale de l'hôpital de Sikasso à propos de 101 cas.,thèse de medecine, Sikasso, 2010.

[13] **Dembélé M**, «Perforations typhiques de l'intestin grêle : A propos de 16 cas,» Médecine d'Afrique Noire, vol. 4, n° 121, p. 3, 1974.

[14] **Konate H** , thèse:Abdomens aigus chirurgicaux dans le service de chirurgie générale et pédiatrique au CHU Gabriel Touré. Thèse de medecine, Bamako, 2001.

[15] **Dembele B.M.**, Etude des péritonites aiguës généralisées dans les services de chirurgie générale et pédiatrique de l'Hôpital Gabriel Touré. Thèse de Médecine, Bamako 2005, pp. 51-52.

- [16] **Ongoïba N., Yena S., Dembele M., Diallo G., Traore A.D., Koumare A.K.** Abdomens aigus chirurgicaux à l'hôpital du Point G-Bamako. Les premières journées des sciences de la santé 1999, Ouagadougou.
- [17] **Ayite A., Etey K., Feteke L.**, Les plaies pénétrantes de l'abdomen au CHU de Lomé. A propos de 44 cas. Médecine d'Afrique Noire, 1996,43 (12) : 642-646.].
- [18] **Bouaggad E**, Les péritonites aiguës généralisées chez l'adulte à l'hôpital El Ghassani à Fès Thèse de médecine ; N°269., Casablanca, 2001
- [19] **Lorand I, Molinier N, Sales JP, Douchez F, Gayral F.**, Résultats du traitement coelioscopique des ulcères perforés Chir. Paris 1999 ; 124 : 149-53
- [20] **Fagniez P., Serpeau J., Thomson C.**, «Péritonites aiguës,» J Am coll Surg, 1982.
- [21] **Cougard P., Barrat Ch, Gagnel F, Cadiere Gb, Meyer Ch, Faguiez L. et al.** Le traitement laparoscopique des perforations ulcéreuses duodénales. Résultats de l'enquête multicentrique de la SFCL. Annales de Chirurgie. 2000, n°125: 726-31.».
- [22] **Ohman C. Wacha H.**, «Prospective evaluation of prognostic scoring systems in peritonitis. Peritonitis Study Group.» European Journal of Surgery, vol. 267, n°174, p. 159, 1993
- [23] **Pacelli F., Alfieri S., Piccioni E., Sgadari A., et Gui D.**, «Prognosis in intra-abdominal infections. Multivariable analysis on 604 patients,» Arch Surg, vol. 131, pp. 641-5, 1996.
- [24] **Dissa B.A.**, Les péritonites aiguës : aspects cliniques, diagnostiques et thérapeutiques à l'hôpital Fousseyni Daou de Kayes. Thèse de médecine N°53; Bamako 2012 .
- [25] **Kouame B.**, «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 2001; 94 (5): 379 - 82.
- [26] **Chichom-Méfirié A., Tabe Fon A., Ngowe-Ngowe M.**, Which cause of diffuse peritonitis is the deadliest in the tropics? A retrospective analysis of 305 cases from the South-West Region of Cameroon,» World Journal Emergency Surgery., vol. 11, n° 114, 2016
- [27] **Kais. M., Al-Wattar S., Zakaria.Y.**, Risk Factors for duodenal ulcer perforation in Mosul – Iraq Middle East Journal of Emergency Medicine, Sept 2005, vol 5 (n°2))».
- [28] **Harouna Y., Abdou I, Saidou B., Et Bazira L.**, «Les péritonites en milieu tropical: particularités étiologiques et facteurs pronostic actuels, à propos de 160 cas,» Médecine d'Afrique noire, n° 148, pp. 103-106, 2001.

[29] **Camara B.** La péritonite par perforation appendiculaire au CHU Gabriel Touré N°80] Thèse de médecine.Bamako 2008

[30] **Fagniez P.L.**, «Péritonites aiguës.» Encyclopédie Méd Chir Estomac – Intestin 1982 ; 9045 A10, 6, J Am coll Surg .2000 Dec; 191(6):635 - 42..

[31]**Traore S.S., Sanou J., Bonkougou G., Kirakoya B., Zida M., Bandre E., Sanou A.,**» Les perforations des ulcères gastro-duodénaux au CHNYO-B.F.Annales de l'Université de Ouagadougou, 2000, Série B, vol 111 : 115-12

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