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 or 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]. ADAMOU 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
<table>
<thead>
<tr>
<th>Etiologies</th>
<th>Number (n)</th>
<th>Frequency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gastric perforation</td>
<td>45</td>
<td>24.5</td>
</tr>
<tr>
<td>Appendicular Perforation</td>
<td>40</td>
<td>22.0</td>
</tr>
<tr>
<td>Ileal Perforation</td>
<td>30</td>
<td>16.5</td>
</tr>
<tr>
<td>Other causes</td>
<td>24</td>
<td>13.2</td>
</tr>
<tr>
<td>Caecal Perforation</td>
<td>14</td>
<td>7.7</td>
</tr>
<tr>
<td>Perforation of the small intestine</td>
<td>13</td>
<td>7.1</td>
</tr>
<tr>
<td>Perforation of the antrum</td>
<td>8</td>
<td>4.4</td>
</tr>
<tr>
<td>Intestinale Occlusion</td>
<td>4</td>
<td>2.2</td>
</tr>
<tr>
<td>Tuberculous Peritonitis</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Post-operative peritonitis</td>
<td>2</td>
<td>1.1</td>
</tr>
<tr>
<td>Total</td>
<td>182</td>
<td>100</td>
</tr>
</tbody>
</table>

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.

Table 2: patients’ distribution following surgical treatment
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

<table>
<thead>
<tr>
<th>Complications</th>
<th>Number (n)</th>
<th>Frequency(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anemia</td>
<td>8</td>
<td>4,62</td>
</tr>
<tr>
<td>Dehydratation</td>
<td>2</td>
<td>1,16</td>
</tr>
<tr>
<td>Cardiacarrest</td>
<td>1</td>
<td>0,58</td>
</tr>
<tr>
<td>Ascitis</td>
<td>1</td>
<td>0,58</td>
</tr>
<tr>
<td>Bradycardia</td>
<td>1</td>
<td>0,58</td>
</tr>
<tr>
<td>Hypotension</td>
<td>1</td>
<td>0,58</td>
</tr>
<tr>
<td>Hypertension</td>
<td>3</td>
<td>1,73</td>
</tr>
<tr>
<td>Respiratoryinsufficiency</td>
<td>1</td>
<td>0,58</td>
</tr>
<tr>
<td>Fever</td>
<td>6</td>
<td>3,47</td>
</tr>
<tr>
<td>Thypoid Fever</td>
<td>2</td>
<td>1,16</td>
</tr>
<tr>
<td>Malaria</td>
<td>2</td>
<td>1,16</td>
</tr>
<tr>
<td>Occlusion</td>
<td>2</td>
<td>1,16</td>
</tr>
<tr>
<td>Non determined</td>
<td>147</td>
<td>82,66</td>
</tr>
<tr>
<td>Total</td>
<td>171</td>
<td>100</td>
</tr>
</tbody>
</table>

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 3 years 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


