

Perioperative Management Access of Peritonitis at the Regional University Hospital of Oueme-Plateau (CHUD/OP) at Porto-Novo in Benin Republic

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ABSTRACT

Introduction: peritonitis is a surgical emergency. Because of their frequency, they are a public health problem in sub-Saharan Africa. The delay in appropriate medical and surgical management is responsible for high morbidity and mortality.

Objective: To assess the perioperative management of peritonitis.

Materials and methods: A retrospective, descriptive and analytical study over a 12 months-period. Sociodemographic, clinical, therapeutic and evolutionary data were studied. These data were entered and analyzed with Epi Data 3.1 and SPSS version 21 software. For the comparison of the results, the chi-square test or the exact Fischer test were used as appropriate. The significance threshold was for a p-value $\leq 5\%$.

Results: The frequency of peritonitis was 21%. The mean age was 28.7 years. The sex ratio was 1.65. The majority of patients (87%) had surgery within 24 hours of admission. Anesthesia was general with crush induction in all cases and was provided mainly by nurse anesthetists in 85% of cases. 75% of patients were followed up postoperatively in the intensive care unit. Mortality was 10.39%. Age over 60 and delay in surgical management over 48 hours has been associated with death.

Conclusion: Peritonitis was very frequent at CHUD/OP and represented 21% of digestive surgeries. The medical and surgical management suffered from a lot of insufficiency.

Keywords: Peritonitis; Perioperative; CHUD/OP

INTRODUCTION

Acute peritonitis is an inflammatory reaction of the peritoneum to an attack which can be chemical, infectious or other [1-3]. The Hamburg classification differentiates peritonitis into primary, secondary and tertiary [4,5]. The anesthesiologist will be more confronted with the secondary forms which are the most frequent [4-6]. Peritonitis is a public health problem in sub-Saharan Africa. They are burdened with high morbidity and mortality [1, 4,5]. Treatment involves surgical control of the infectious source, appropriate antibiotic prophylaxis and correction of hydroelectrolytic disorders [7-9]. Delay in treatment and unsuitable antibiotic therapy darken the prognosis [4].

Objectives

- Calculate the frequency of peritonitis
- Determine the clinical characteristics of peritonitis
- Evaluate the perioperative management of peritonitis

MATERIALS AND METHODS

It was a cross-sectional, descriptive and analytical study. It was carried out over a 12 months-period running 1st, January through 31st, December, 2017 in the Anesthesia and critical care department of the CHUD/OP at Porto-Novo in Benin. Data collection was carried out using a pre-established collection form, based on registers of ICU records. All cases of peritonitis operated on during the study period were included. Peritonitis

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cases with unusable records have been excluded. For the assessment of treatment, we chose as a reference: the recommendations of the French Society of Anesthesia and Resuscitation (SFAR). The data were entered and analyzed using Epi Data 3.1 and SPSS version 21 software. The quantitative data were expressed as an average followed by the standard deviation and the qualitative data in frequency. The relationship between the different variables was tested using the chi-square test or the exact Fischer test depending on the case at the significance level of 5%. The dependent variable was peritonitis; the independent variables studied were: age, sex, ASA class, and etiologies of peritonitis, time taken for treatment from admission to the emergency room and surgery, type of anesthesia, qualification of the anesthetist, anesthetic induction drugs, antibiotic therapy and mortality.

RESULTS

Frequency

A total of 77 cases of peritonitis were collected out of the 365 operated on by digestive surgery, corresponding to a frequency of 21%.

Socio-demographic data

The mean age was 28.7 years (range: 5 years and 75 years); twenty five patients (32.50%) were under 18 years of age, thirty eight (49.50%) were between 18 and 40 years of age and eighteen (14%) were over 40 years of age. The male sex represented 62.34% of the cases, ie a sex ratio of 1.65.

Clinical data

An anesthetic evaluation is always carried out in the emergency room, most often by nurse anesthetists. Most of our patients had no co-morbidity and were classified ASA1 (96%) and ASA2 (4%). A systematic preoperative assessment was requested in the emergency room; he was doing the kidney check, the hemogram and the hemostasis check. The other assessments were based on the patient's history. In 52% of cases, the assessments were not carried out due to lack of financial means.

Etiopathologically

97.40% of peritonitis was community-based and the etiologies were appendicular (47%), typhic (18%); gastric perforations were 17%, gynecological peritonitis 9% and traumatic and primary peritonitis 6.40%.

Therapeutic data

After admission to the emergency room, sixty-seven patients (87%) were operated on within 24 hours, eight patients (10%) between the 24th and 48th hours. The two remaining cases were post-operative peritonitis which was operated on 48 hours after diagnosis.

Preoperative resuscitation in the emergency department consisted in all of the operated patients: Placing O2 peripheral venous accesses with a G18 catheter, a vesical probe, a

nasogastric probe and correcting hypovolemia, hydro electrolytic disorders and anemia. This resuscitation was performed in all of our patients. Broad spectrum probabilistic antibiotic therapy has been initiated in the emergency room. These were combinations of Ceftriaxone+Metronidazole in 93% of patients, Amoxicillin-Clavulanic acid+Metronidazole in 04% and Ciprofloxacin +Metronidazole in cases of postoperative peritonitis (3%).

General anesthesia with rapid sequence orotracheal intubation was the anesthesia technique used in all patients. Anesthesia was performed in 85% of cases by nurse anesthetists. The induction drugs used were: Ketamine+Suxamethonium in 55 patients (71.40%), Thiopental+Suxamethonium in 21 patients (27.30%); Propofol+Suxamethonium in 01 patient (1.30%). The anesthesia maintenance was done with Pancuronium, Fentanyl and Isoflurane in all patients.

Postoperative analgesia was multimodal analgesia with the associations: Paracetamol+Tramadol+Nefopam in 59 patients (76.40%); Paracetamol+Tramadol (23.40%). Fifty-eight patients (75%) stayed in intensive care post-operatively. The average length of stay in intensive care was 05 days.

Morbidity and mortality

The complications of cases of peritonitis are summarized in Table I. The wall suppurations have not been documented in the patient files.

Eight deaths were recorded, corresponding to a mortality of 10.39%.

Factors associated with mortality: Age \geq 60 years and the time to care >48 hours were associated with mortality ($p < 0.001$ in both cases).

DISCUSSION

Our study was cross-sectional with retrospective data collection. Some data escaped us because it was not entered in the patient's medical records. This is the case with the results of the preoperative check-ups. The patients' preoperative laboratory abnormalities were therefore not notified. Intraoperative adverse events are not always noted on the surveillance sheets and constitute the limits of our study.

The frequency of peritonitis was relatively high, 21% of digestive surgeries. In Sub-Saharan Africa this frequency varies between 12.5% and 35% [10-13]. In Morocco peritonitis is less frequent than in Sub-Saharan Africa; the rates of 8.7% and 9.8% were reported respectively by Bouaggad et al. and Azgaou et al. [14,15]. In France Lorand et al. noted a frequency of 3% [16].

Peritonitis most commonly affected young adults (28.7 years of average age). The same observations were noted by the authors in Black Africa where the mean age varied between 23 years and 29 years [10-13]. The young age of peritonitis cases in Sub-Saharan Africa is related to the etiologies of peritonitis and the illiteracy of populations. These are most often peritonitis of appendicular and typhic origin treated at the beginning by self-medication. In North Africa and Europe, on the other hand, peritonitis affects older people with average ages of 45.5 and 48 years, respectively [15,16]. The etiologies are mainly gastric

perforations in the Maghreb, inflammatory and intestinal tumor diseases in Europe.

Management

The time taken for intra-hospital surgical management was less than 24 hours in 87% of our patients. However, the overall time taken for care is longer, patients having hung out at home or in illegal medical offices before they decided to arrive to the emergency room. A delay >24 hours has been reported as a risk factor for mortality in the literature [5].

Antibiotic therapy

In community peritonitis, the combination Ceftriaxone and Metronidazole was the most used without any prior bacteriological sampling. The 40.1% resistance rate to Ceftriaxone to CNHU-HKM was reported in 2016 [17]. The duration of the antibiotic therapy as well as the choice of certain antibiotic molecules were not in accordance with the recommendations of our standard [18]. The antibiotic molecules used in post-operative peritonitis have not been in accordance with the recommendations of scientific societies [19-21].

Anesthesia was provided in 85% of cases by nurse anesthetists. During the study period, only one anesthesiologist was present in the hospital. The shortage of specialist doctors in our hospitals contributes to poor patient care.

The anesthetic induction drugs used in our study were not consistent in 28.60% of the cases.

Postoperative follow-up of patients was done in 75% of cases in intensive care unit; it consisted of a hydro-electrolyte rebalancing, multimodal analgesia, prevention of thromboembolic disease and the continuation of probabilistic antibiotic therapy; a systematic post-operative clinical check-up was requested on the day of hospitalization, before discharge from intensive care and when a change in the clinical status was noted. The high cost of critical care, the lack of financial means for the majority of our patients and the lack of health insurance for the populations, mean that the patients did not fully benefit from the prescribed care.

Postoperative complications were mainly represented by anemia (21%) and metabolic disorders (14%). The anemias were treated by blood cell transfusion. Metabolic disorders were mainly represented by hyponatremia, hypokalemia and functional renal failure; their management was a hydro-electrolyte rebalancing. 04 cases of septic shock were recorded. Adrenaline was the only vasopressive drug used. The recommended norepinephrine was not available.

All these shortcomings noted in terms of human resources, financial resources and technical support had favored a relatively high mortality of peritonitis in the intensive care unit in our study. Sub-Saharan Africa suffers from the same problems in terms of its health structures [14,15]. In developed countries, the mortality rate varies from 4% to 26% according to the work of Montravers et al., Roehrborn et al. and de Sotto et al. [7,16,17]. The high mortality rates found in developed countries are due to the etiologies of peritonitis dominated by tumor diseases, the

advanced age most often of patients and the presence of several comorbidities.

The delay in treatment ≥ 48 hours and age >60 years were associated with death in our series. These data confirm those of the literature on peritonitis [15].

CONCLUSION

Peritonitis was common at CHUD/OP. Patients were often treated surgically within 24 hours of admission to the emergency room, but arrived at the hospital several days after the onset of symptoms. Anesthetic care was often provided by the nurse anesthetists. The nonconformities were observed in both antibiotic therapy and the anesthetic induction drugs used. Most patients were admitted to intensive care postoperatively but did not receive all of the care prescribed because of lack of financial means. All these shortcomings had contributed to a high morbidity and mortality from peritonitis at CHUD/OP.

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