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**RESEARCH ARTICLE**

**MANAGEMENT OF NON-TRAUMATOLOGICAL ABDOMINAL SURGERY EMERGENCIES  
IN POOR SETTING CONDITIONS**

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**ABSTRACT**

**Background:** Abdominal emergencies or acute abdomens are abdominal affections which may lead to a fatal risk if any action is undertaken in emergency. The death can occur in few hours or some days after. **Aim:** This study assessed the management of non-traumatological abdominal surgery emergencies in poor setting conditions. **Methods:** A prospective cross sectional study was conducted from October 15<sup>th</sup>, 2013 to April 15<sup>th</sup>, 2014 in four hospitals (Cliniques Universitaires du Graben, Matanda hospital, GRH of Katwa and Kitatumba) of Butembo, Democratic Republic of Congo. **Results:** for the management of non-traumatological abdominal surgery emergencies in poor setting conditions such as in the area where this study was conducted, physicians had 6-20 minutes for examination in 67.5% of cases and 68% benefited of whole blood count cells. 35% of patients were operated beyond 24 hours. Post-operative infections remain the frequent complications. 84.7% of patients had a good evolution and the rate of mortality due to peritonitis and intestinal occlusions was 7.9%. **Conclusion:** The management of non-traumatological abdominal surgery emergencies in poor setting conditions such as in Butembo, Democratic Republic of Congo; should be organized by instalment of emergency unit, use of specific diagnostic tools, qualified employees and the fight against post-operative infections.

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**INTRODUCTION**

Abdominal emergencies or acute abdomens are abdominal affections which may lead to a fatal risk if any action is undertaken in emergency and the death can occur in few hours or some days after [1]. The notions of brief delay being relative, in acute cases, only few minutes are disposed for reacting [2]. In France, it is considered as relevant to emergency, a risk of six to twelve hours [2]. In practice, it is important to notice situation compromising vital prognosis, and in this case the rapid transfer of the patient in well equipped hospital is indispensable [3]. In front of an abdominal pain, there is a necessity for doing the hierarchical organization in the management [4].

The following situations are possible: high-pitched abdomen or vital emergency, acute abdomen that means acute pathology, sub-acute abdomen or deferred emergency [2,4]. The prevalence and the potential gravity of the affections called "surgical" impose an indispensable coordination and collaboration between emergency physician and surgeon physician" for the optimal and rational management of a patient

presenting acute abdominal pain [5, 6]. The surgeon must be anxious to get not only in the briefest delay, the minimum of sequels, but also good the quality recovery of operated patients [7]. Whereas formerly the surgery summarized all the therapeutic of the surgical emergencies, it constitutes today one of the terms, however, the major term, of a complex treatment that will be based on a precise diagnosis and on knowledge of the local and general, mechanical or biologic disruptions that it causes [7-9].

In developing countries, the emergency surgery would be far from satisfying to all these requirements. In poor setting conditions in which we are working, it is sometimes difficult to evacuate a patient presenting acute abdomen. Most of them arrive to the emergency hospital after a long delay in which the re-establishment of vital functions would be done in order to allow an efficient surgery. Especially in Butembo, there is a proliferation of therapeutic traditional centres where a lot of patients can be sequestered and so to be transferred to the hospital after deterioration of their general state. Otherwise, due to a lack of imagery devices, the surgeon is tempted to make exploring laparotomies to confirm his diagnosis. The lack

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of resuscitators team in most hospitals leads to difficulties of getting successes on some emergency interventions. The main aim of this study was to assess the management level of non-traumatological abdominal surgery emergencies in Butembo, Democratic Republic of Congo. Specifically, we aimed to determine the diagnostic methods and frequent observed pathologies, modalities of management, surgeries outlet and to propose tracks of solution to improve the management.

**METHODS**

This was a cross sectional prospective study conducted from October 15<sup>th</sup>, 2013 to April 14<sup>th</sup>, 2014 in Butembo, Democratic Republic of Congo. The recruitment took place in the different surgery departments of Matanda Hospital, Cliniques Universitaires du Graben, and General Referral Hospitals of Katwa and Kitatumba. The selection of hospitals where the study has been done, took into account of the frequentation and the nature of interventions achieved and of the hierarchy (structures of reference).

This study included patients undergoing surgery relevant to the non-traumatological abdominal emergency and with complete medical file. Were excluded from this study patient with abdominal complain from traumatological origin, patients with non-emergency traumatological abdominal complain, and patient from internal medicine ward. Patients with tumoural occlusion which the symptomatology dated from several days were also excluded.

The variables studied were: age, sex, and consultation time-limit, cause of delay for consultation, complications and outlet of patients.

The protocol of this study was submitted and approved by the Ethical reviewer of Université Catholique du Graben. Written informed consent was obtained from patients or their relatives after explaining the purpose and objective of the study.

Capture and analysis were performed by using EPI INFO7.1.3.0 software, software for computer processing of epidemiological surveys. We have used the usual statistical tests such as percentages, sex ratio, and mean with standard deviation.

**RESULTS**

*Epidemiology and aetiologies of non-traumatological abdominal surgery emergencies*

During our study period, 1058 patients were admitted in surgery departments of the four hospitals (Cliniques Universitaires du Graben, Matanda hospital, GRH of Katwa and Kitatumba); patients from whom 203 were included in this study. Non-traumatological abdominal surgery emergencies represented 19.18% of admissions in surgeries departments of the four hospitals in which this study was conducted. The most frequent aetiology is the acute appendicitis (47.8%) followed by acute peritonitis, acute intestinal occlusion and gynaecologic causes with respectively 21.2%, 19.2% and 8.8%. Tuberculous ileitis, abdominal aneurism punched, kidney abscess and

vesicular abscess were not frequent and represented respectively 1.5% and 0.5% for the three remaining. Females were most represented in 59.6% and the sex ratio was 0.6 (Table 1). The bracket age more touched was 21-30 years old (Table 2). The mean age was 30.2 with 2 months and 83 years old as extreme ages.

*Assessment of the management level of non-traumatological abdominal surgery emergencies*

178 (87.7%) patients consulted beyond six hours and 3.9% between five and six hours from the manifestation of the first symptoms. 80 (39.4%) patients spent their times by being managed in minor health centre. According to the time-lime between the arrived and medical examination of patients, 80 (39.4%) were examined in the 6-10 minutes of their arrival at the hospital and 57 (28.1%) in the 11-20 minutes. Regarding the beginning of resuscitation and the arrival time-limit to the hospital, 51.7% of patients were reanimated after 60 minutes, 20.7% in 21-30 minutes and 2% in the 6-10 minutes after their arrival. Most of patients (68%) benefited with whole blood count cells as laboratory exam but 11.3% did not benefit with any laboratory exam. In 35% of cases, the surgery was done beyond 24 hours. According to complications observed, 85.2% cases were without any complications but we noticed 8.5% of infectious complications (Table 3). The mortality rate was 7.9% (Table 4).

**Table1** Principal aetiologies of non-traumatological abdominal surgery emergencies and sex repartition

Aetiologies	Male	Female	Total	%
Acute appendicitis	37	60	97	47,8
Acute peritonitis	18	25	43	21,2
Acute intestinal occlusion	25	14	39	19,2
Gynaecologic causes	0	18	18	8,8
Tuberculous ileitis	0	3	3	1,5
abdominal aneurism punched	1	0	1	0,5
Kidney abscess	1	0	1	0,5
Vesicular abscess	0	1	1	0,5
Total	82(40.4)	121(59.6)	203(100)	100

**Table2** Patients repartition according to their age

Age	n	%
0-10	15	7.4
11-20	51	25.1
21-30	55	27.1
31-40	30	14.8
41-50	7	6.9
51-60	7	6.9
61-70	16	7.9
71-80	3	1.5
>80	5	2.4
Total	203	100

**DISCUSSION**

*Epidemiology and aetiologies of non-traumatological abdominal surgery emergencies*

The frequency of non-traumatological abdominal surgery emergencies was 19.18%. The age of 21-30 was more touched than others but the mean age was 30.2 years. Attipou et al., in their study, found the mean age of 32 years. His results and ours are proximate to be the same [10].

**Table3** Assessment of the management level of non-traumatological abdominal surgery emergencies

Variable	n(N=203)	%	Variables	n( N=203)	%
Consultation time-limit from the 1 <sup>st</sup> symptom			<b>Resuscitation beginning time-limit</b>		
< 1 hour	4	2.0	6-10 minutes	4	2.0
1-2 hours	7	3.4	11-20 minutes	19	9.4
3-4 hours	6	3.0	21-30 minutes	42	20.7
5-6 hours	8	3.9	31-60 minutes	33	16.3
>6 hours	178	87.7	>60 minutes	105	51.7
Causes of patients delay consultation			<b>Surgical intervention time limit</b>		
First care in a health centre	80	39.4	< 1 hour	4	1.9
Unknown	72	35.5	1-2 hours	14	6.9
Longue distance and lack of transport	17	8.4	3-4 hours	12	5.9
Longue distance	12	5.9	5-6 hours	19	9.4
Lack of transport	11	5.4	7-12 hours	28	13.8
Traditional treatment	11	5.4	13-24 hours	55	27.1
Medical examination time-limit and patients arrival			>24 hours	71	35
< 5 minutes	17	8.4	<b>Complications observed</b>		
6-10 minutes	80	39.4	None	173	85.2
11-20 minutes	57	28.1	Infectious	17	8.4
21-30 minutes	31	15.3	Digestive fistula	7	3.4
31-60 minutes	11	5.4	Shorten post-op	4	1.9
>60 minutes	7	3.4	Evisceration	1	0.5
Laboratory exams done			Haemorrhage	1	0.5
WBC	138	68	<b>Evolution of patients</b>		
None	23	11.3	Simple	172	84.7
ASP + WBC	16	7.9	Iliac anus	2	1.0
USS + WBC	15	7.3	Death in 48 hours	3	0.5
ASP + USS	1	0.5	Death after 48 hours	10	4.9
ASP	5	2.5	Death on operating table	3	1.5
USS	4	2.0	Abdominal complication+ Iliac anus	1	0.5
ASP + WBC + USS	1	0.5	Temporary Abdominal complication	12	5.9

WBC: Whole Blood Count Cells  
 ASP: Abdomen X-ray without contrast  
 USS: Ultrasound Scan

Non-traumatological abdominal surgery emergencies are frequent at females than at males: 59.6% against 40.4% with a sex ratio of 0.6 (see table 1). Attipou *et al* . Found 64.4% for males against 35.6% for females, sex ratio of 1.8 [10]. Abdoul Aziz and Dembelé, in their study conducted in Mali, found also the predominance of males to females with a sex ratio of 1.8 [11].

**Assessment of the management level of non-traumatological abdominal surgery emergencies**

Most of patients (87.7%) had consulted in a delay with a time-limit superior than 6 hours. The survey of Aziz Abdoul revealed 51.4% of patients having consulted with delay of time-limit from 1 to 5 days [11]. This delay can be explained by the ignorance of the gravity of an abdominal pain by the population but also the fear of the financial cost that the diagnosis would cost for a poor family.

39.4% of our patients had first followed either in ambulatory either in hospitalization, a treatment in a minor health centre without success. Abdoul Aziz observed during his survey that only 18.6% of the cases were referred [11]. 35.5% had resigned themselves to take a treatment and 5.4% had consulted a traditional health practitioner. This result would have a proportion more or less elevated than the one we have got, because most of patient do not confess that they have taken traditional treatment. Most of patients (75.9%) had seen with a physician with a delay of 0-20 minutes.

The availability of physicians 24h out of 24h especially in the hospitals with physician in training was advantageous for the patients. The patients who had a delay of consultation are those who spent enough time in the sorting service.

The resuscitation had started in more than 60 minutes for 51.7% of cases. This resuscitation consisted in the drip of crystalloids and the setting up of piping. Indeed, most surgical interventions were programmed. Hence, the resuscitation for these patients started in immediate per-operative time. The little delays observed were due to the fact that the resuscitation was only decided after complete medical examination of the patient and no to the deficiency of drugs. Hospitals in which this study was done make available the drugs to all patients even for poor patient.

The whole blood count cell was the more asked laboratory exam in 68% of the cases. The imagery represents 20.3%, summing up in ASP and ultrasound scan. A survey in the Bamako report the frequency of ultrasound scan raised on 70.5% in relation to the other laboratory exams [1]. The realization of different laboratory exams was reduced due to the poverty of the patients, incapable to answer to the financial requirements. The use of the ultrasound scan is restricted to the diagnosis of gynaecological pathologies and there is fewer physicians who are trained for ultrasound scan interpretation.

35% of patients had benefitted from surgical intervention in a delay time-limit superior to 24 hours. Anne Marie in Paris reported 38% of the cases [12]. This frequency represents the

programmed surgical interventions. The delay in surgical intervention was caused by the difficulty for the physician to share between the ambulatory patients, hospitalized patients and surgical interventions. The increasing of physicians is needed. Interventions achieved in a brief delay were cases of extreme emergency. Sometimes it is difficult to be pronounced on the surgical nature of a symptomatology. Some appendicitis has first been treated for a urinary infection before the patient did not undergo surgical intervention. It had contributed to most delays.

85.2% of our patients had not posed any problem. The good resuscitation and the strict respect of the asepsis competed there. The infection of the operative wound and/or the abdominal cavity was the more represented 8.4% of the complicated cases. Even in serious cases the septicaemia had carried away the patient. This result is superior to the one of Abdoul Aziz (4.3%) [11].

The majority of our patients had had a simple outlet. We observed a mortality rate of 7.9% of which 4.9% of death had occurred after 48h. This mortality rate is superior to the one recovered in Togo [10] and lower to the one reported in Mali 10% [11]. The majority of death was due to general complications on a digestive lesion. The per-operative and post-operative resuscitation as well as the post-operative surveillance could be factors to take into account to avoid these deaths.

## CONCLUSION

In this study, we noticed that patients are received by the nursing staff in an acceptable delay but a big part underwent surgical intervention late. The most frequent reason is the physician's occupation to other activities of the hospital as the number of physician is minim. Apart from the physical examination, the physicians resort more to the whole blood count cells to orient their diagnosis. The imagery is not of current use. Most patients have a simple outlet. The post-operative infection is the more met complication. The mortality rate is not negligible, more masculine than feminine, and the pathologies dragging more death are the peritonitis and the closures. We recommend to the government to support the medicine faculty finding in this area, as this can help to increasing the number physician and to support those hospitals as they work in poor setting conditions.

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