

## Epidemiological and Diagnostic Aspects of Abdominal Surgical Emergencies in a Developing Country

Allodé SA<sup>1</sup>, Hodonou MA<sup>2</sup>, Tamou-Sambo BE<sup>3</sup>, Séto DM<sup>4\*</sup>, Houéto GR<sup>5</sup>, Aloukoutou YK<sup>6</sup>, Mensah E<sup>7</sup>

<sup>1</sup>Professor, General Surgery Department of Parakou Teaching Hospital, Benin

<sup>2</sup>Assistant-professor, General Surgery Department of Parakou Teaching Hospital, Benin

<sup>3</sup>Assistant-professor, General Surgery Department of Parakou Teaching Hospital, Benin

<sup>4</sup>Resident, General Surgery Department of Parakou Teaching Hospital, Benin

<sup>5</sup>General Practitioner

<sup>6</sup>Resident, General Surgery Department of Parakou Teaching Hospital, Benin

<sup>7</sup>Professor, General Surgery Department of Parakou Teaching Hospital, Benin

### \*Corresponding author

Séto DM

Email: [seto.morel@gmail.com](mailto:seto.morel@gmail.com)

**Abstract:** Abdominal surgical emergencies are a public health problem. This study aimed to investigate the epidemiological aspects of abdominal surgical emergencies, the different types and their causes. It has been achieved in northern Benin in the general surgery departments of the teaching hospital of Parakou and Boko district hospital. It was a transversal and descriptive study with a prospective data collection from April 20<sup>th</sup> to September 20<sup>th</sup> 2015. All patients whose diagnosis was confirmed at laparotomy were included in the study. In five months, 96 patients were admitted for abdominal surgical emergencies out of a total of 394 patients who had a surgical emergency, so 24.4%. The mean age of the patients was  $29 \pm 16.4$  years and the sex ratio was 2.4. The mean elapsed time from the onset of the emergency to the arrival of the patient to the consultation was 5 days  $\pm$  6. Non-traumatic abdominal surgical emergencies accounted for 89.6% and the traumatic ones 10.4%. The most common disorders of Non-traumatic abdominal surgical emergencies were peritonitis (33.3%), incarcerated hernia (22.9%) and appendicitis (21.9%). For traumatic abdominal surgical emergencies, it was peritonitis due to intestinal perforation in 4 patients followed by hemoperitoneum due to hepatic wound or splenic rupture in 3 patients each one. Abdominal surgical emergencies are common in the surgery departments of the teaching hospital of Parakou and Boko district hospital dominated by non-traumatic ones, with peritonitis in the forefront.

**Keywords:** emergency, abdominal surgery, peritonitis, splenic and hepatic rupture.

### INTRODUCTION

Abdominal surgical emergencies (ASEs) are a public health problem [1] because of their frequency and cost to society. They are subdivided into two groups: non-traumatic abdominal surgical emergencies (NTASEs) and traumatic abdominal surgical emergencies (TASEs). In developing countries, particularly in Africa, the etiologies of the NTASEs are dominated by peritonitis, appendicitis, intestinal obstructions and incarcerated hernias [2]. In recent years, abdominal trauma has become more and more frequent because of road accidents, the rise of armed conflicts and serious criminality [3, 4]. Problems of cultural and financial order are often at the root of the delay in consultation. This explains the existence of complications as soon as the patient is admitted, making the treatment difficult for the resuscitator and the surgeon. The goal of this study was to identify the

epidemiological aspects of ASEs, the different types and their causes.

### PATIENTS AND METHODS

This work has been achieved in northern Benin in the general surgery departments of the teaching hospital of Parakou and Boko district hospital. It was a cross-sectional and descriptive study with prospective data collection over a period of 5 months, from 20<sup>th</sup> April 2015 to 20<sup>th</sup> September 2015. Were included in the study, patients of any age admitted in one of these two hospitals for an abdominal surgical emergency and the diagnosis was confirmed at laparotomy. An ASE is any abdominal pain requiring surgical management within minutes or hours following admission of the patient. Those admitted for ASE but deceased prior to surgery were excluded. The variables studied were anthropometric and diagnostic (time to consultation after first symptom onset, previous treatment, clinical

and paraclinic signs, diagnosis and etiology). The data collected were analyzed using the Epi info 7.

**RESULTS**

**Epidemiological aspects**

During the study period, 96 patients were admitted for ASE out of a total of 394 patients who consulted for surgical emergency. Therefore the ASEs accounted for 24.4% of surgical emergencies. There were 68 men (70.8%) and 28 women (29.2%) so a sex ratio of 2.4. The mean age of patients was 29 years ± 16.4 with extremes of 3 days and 72 years. Pupils and students were the most represented (36.5%) followed by artisans (24%) and farmers (23%).

**Clinical aspects**

The mean time to consultation after first symptoms onset was 5 days ± 6 with extremes of 30 minutes and 10 days. More than half of the patients (52.1%, 50/96) consulted 72 hours after the onset of the disease. Considering the traumatic or non-traumatic context of the abdominal emergency, this delay was 3 days ± 2 with extremes of 12 hours and 10 days in case of NTASEs while it was 7, 4 hours with extremes of 30 minutes and 1, 83 days in the TASEs. Seventy-two patients received treatment before admission. Treatment of conventional medicine was reported in 51.1% of cases, including 10% of self-medication. Traditional treatment was noted in 35.4% of patients. The symptoms are summarized in the table I. Fever was found in 42 patients (43.7%), shock in 13 patients (13.5%) and dehydration in 4 patients (4.1%).

**Table 1: Distribution of patients admitted for ASE according to symptoms**

	No of cases	Percentage (%)
Abdominal pain	92	95,8
Vomiting	61	63,5
Fever	42	43,8
Stopping materials and gases	22	22,9
Abdominal distension	16	16,7
Diarrhoea	6	6,3
Absence of meconium emission	3	3,1
Hematemesis	2	2,1
Rectorrhagia	1	1

At physical examination a painful and irreducible inguino-scrotal swelling was present in 22 patients (23%), meteorism in 9 patients (9.4%) and the prominence of the muscles of the abdomen wall in 8 patients (8.3%). Rebound tenderness was the constant

sign present in all patients. It was localized in 56.3% of patients and generalized in 43.7%. Table II shows the signs observed at examination of the abdomen. Paracentesis was positive bringing back blood in 6 patients.

**Table 2: Distribution of patients admitted for ASE according to the signs at physical examination**

	No of cases	Percentage (%)
Localized pain	54	56,3
Generalized pain	42	43,7
Hyperesthesia	16	16,7
Guarding	50	52,1
Rigidity	10	10,4
Murphy's sign	1	1,0

**Paraclinic aspects**

White blood cells was requested for all patients but could only be performed in 70 patients (72.9%). The results revealed leukocytosis greater than 10 000 / mm<sup>3</sup> in 20 patients (28.6%), leukopenia less than 3500 / mm<sup>3</sup> in 7 patients (10%) and severe anemia with a hemoglobin level below 7g /dl in 5 patients (7.1%). Widal test was requested for 6 patients with suspicious signs of typhic ileal perforation. It was performed only in 4 patients with 3 positive results. Urea and creatinine levels were assessed in 18 patients out of a total of 40 patients for whom the test was requested. He revealed an acute renal failure in 2 patients. Ionograms was performed in 11 patients out of

a total of 36 patients and revealed electrolyte disturbances in 3 patients. These included hypokalaemia, hyperkalaemia and hyponatremia. Plain abdominal X-ray was performed in 36 of 40 patients. The results were: a grey image in 15 patients; a pneumoperitoneum in 11 patients and air fluid levels in 12 patients. Abdominal ultrasound was performed in 15 of 20 patients. Abnormalities were observed in 14 patients. It was free fluid in the peritoneal cavity in 9 cases, 2 cases of infundibular lithiasis and 3 cases of thickening of the appendicular wall.

**Per operative diagnosis**

These were NTASE in 86 patients (89.6%) and TASE in 10 patients (10.4%). Table III summarizes the distribution of patients admitted for NTASE according to diagnosis. For patients admitted for non-traumatic peritonitis (n = 32), table IV presents the various causes identified. In case of intestinal obstruction the different

causes found were a bridle in 5 cases and an anal imperforation in 3 cases. Patients who were victims of abdominal trauma were all admitted to the teaching hospital of Parakou. The diagnosis evoked were peritonitis by ileal wound in 4 cases, rupture of the spleen and wound of the liver 3 cases each one.

**Table 3: Distribution of patients admitted for NTASE according to the diagnosis.**

Diagnosis	Parakou teaching hospital		Boko district hospital		Total
	No	%	No	%	
Peritonitis	21	47,7	11	26,2	32
Incarcerated hernia	1	2,3	21	50	22
Appendicitis	11	25	10	23,8	21
Intestinal obstruction	8	18,1	0	0	8
Acute cholecystitis	1	2,3	0	0	1
Intussusception	1	2,3	0	0	1
Haemoperitoneum*	1	2,3	0	0	1
Total	44	100	42	100	86

\*Postoperative

**Table 4: Distribution of non-traumatic peritonitis according to causes**

	No of cases	Percentage (%)
Gynecological peritonitis	9	28,1
Intestinal perforation	6	18,8
Appendicular peritonitis	5	15,6
Peritonitis by hernial necrosis	4	12,5
Primary peritonitis	4	12,5
Perforated gastro/duodenal ulcer	3	9,4
Urologic peritonitis	1	3,1
Total	32	100,0

**DISCUSSION**

The abdominal surgical emergency (ASE) constitutes a significant surgical activity in the department of general surgery. In this study, it represented 24.4% of patients admitted for surgical emergency. This frequency is comparable to 22% of Adamou H *et al.* [1] in Niger in 2015 and 23.2% of Dieng M *et al.* [5] in Senegal in 2011. In most of studies on ASEs, a male predominance is noted as reported by Kirchoff P *et al.* [6] or Adamou H *et al.* [1] who reported a sex ratio of 3.7. We found a male predominance with a sex ratio of 2.4. The young people were the most affected with an average age of 29 years in our series. This result is comparable to that of Assouto *et al.* [7] in Benin in 2009 who found an average age of 25.4 years. ASEs are still relevant and affect the juvenile layer. Indeed in our countries some urgent abdominal surgical affections occur especially in the young people such as the peritonitis and the incarcerated hernia.

The average time to consultation after first symptoms onset was 5 days. This long delay could be explained by the diagnostic wandering in some peripheral health centers or in the private offices where the consultation is often assured in our context by nurses. The corollary of this lack of diagnostic

management is the delay in referral, which explains the existence of complications as soon as the patient is admitted to the emergency department. Similarly, self-medication and the use of traditional treatment prolong the time of arrival in the hospital. The traditional treatment was followed by 35.4% of our patients and self-medication by 10%. This average time for consultation varied depending on the type of ASE. In case of NTASE it was 3 days whereas in case of TASE the delay is shorter (7, 4 hours). This clear difference between NTASE and TASE could be explained by the fact that traumatized patients in the abdomen understand that there is no alternative to the hospital and it would be beneficial to go there as soon as possible. In the literature, the consultation term after the appearance of the first signs varied. For Allode *et al.* [2] in 2005 this time was 3 days while for Chaibou MS *et al.* [8] in Niger in 2012 and Harouna Y *et al.* [9] it was 2 days. According to Ouro-Bang'na *et al.* [10], it is also necessary to take into account the lack of financial resources of the population who must honor all the prescriptions inherent to the management of his affection. We believe that this calls for the creation of health insurance scheme, which could encourage and facilitate early consultation and adequate care for patients.

The ASEs are still dominated by the NTASEs (89.6% in our series). The same finding was made by Rasomoelina N *et al.* [11] in Fianarantsoa, Madagascar, who found that NTASEs accounted for 77.8% of abdominal surgical emergencies. In the first rank of the NTASEs in our study is the acute generalized peritonitis with 40.92%. Attipou *et al.* [12] in 2005 in Lomé and Tchaou *et al.* [13] in 2014 in Benin also found a predominance of acute generalized peritonitis. This leads us to say that urgent abdominal pathology is still dominated by infectious diseases whereas in Europe it is the intestinal obstructions by tumors that are in the foreground of NTASE [14].

## CONCLUSION

Abdominal surgical emergencies are common at Parakou teaching hospital and Boko district hospital. They affect young people with a male predominance. NTASEs are always at the forefront. Patients go to the consultation several days after the onset of the disease, hence the need for awareness-raising for early consultation and the creation of health insurance scheme.

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