

Traumatic Perforation of the Small Intestine in General Surgery of the CHU Gabriel Touré

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Abstract

Goal: To determine hospital frequency, to describe the clinical and therapeutic aspects and to determine the prognosis. **Patients and Methods:** This was a retrospective and prospective study carried out in the General Surgery Department from 1 January 1999 to 31 December 2015. Inclusion criteria: 1) open or closed trauma of the abdomen with perforation of the small bowel; 2) clinical examination (abdominal pain, vomiting, fever, abdominal contracture, evisceration, intraoperative findings); 3) paraclinical examinations: pneumoperitoneum on the abdominal X-ray without preparation (ASP) and CT scan. Exclusion Criteria: Abdominal trauma without perforation of the small bowel. We selected 128 patients operated for traumatic perforation of the small bowel. The data was entered and analyzed using Word, Excel 2007 and Statistical Package and Social Science Windows 16.0. The statistical analysis consisted in the calculation of the different frequencies of the variables studied. We used the Khi2 test with significance level $P < 0.05$. **Results:** We recorded 119 men versus 9 women and the sex ratio was 13.22. The mean age was 25 years with extremes varying between 15 and 70 years. The majority of patients 57.7% (74 cases) came from the capital, 46.1% (59 cases) were workers, 26.6% (34 cases) of the students. The average time to admission was 29 hours. The main etiologies were road traffic accidents 36.7% (47 cases), stabbing 21.9% (28 cases), firearm 14.8% (19 cases), and sports accidents 10.1% (13 cases). The main clinical signs were abdominal pain 48.44% (62 cases), abdominal contracture 60% (76 cases), disappearance of pre-liver dullness 66.36% (84 cases), and Douglas painful 74.4% (94 cases). The abdominal X-ray without preparation (A.S.P) allowed to objectify a pneumoperitoneum in 45.31% and the scanner a liquid effusion in 45.31% with the associated le-

sions in 37.5% (48 cases). The surgical treatment consisted of 60.15% suture excision (77 cases), 25% anastomosis resection (32 cases) and a 15% stoma (19 cases). The average length of hospital stay was 9 days with extremes of 1 to 60 days. The morbidity was 10.15% at the site of surgical site (OS) infection 17.4% (8 cases), postoperative peritonitis 3.1% (4 cases) and evisceration 0.8% (1 case). Mortality was 17.18% due to septic shock and multivisceral failure. **Conclusion:** Traumatic perforation of the small bowel is an emergency. Young people are more victims. The prognosis depends on the speed of diagnosis and management. Emphasis should be placed on prevention.

Keywords

Abdominal Trauma, Small Perforation, Surgery, Mali

1. Introduction

Traffic accidents are among the main causes of abdominal trauma in both Western and developing countries. The big cities are places of great criminality and banditry with armed attacks. Hail trauma is frequently observed in penetrating wounds but also in bruising of the abdomen. Hail perforations in abdominal trauma have three characteristics that make it difficult to manage:

Their symptoms are delayed; It can be masked because of the therapeutics involved, or on the contrary simulated by the association of lesions and their ultimate consequence, which is peritonitis, can lead to the vital prognosis in the healthy subject and to aggravate the prognosis of the polytrauma [1].

2. Objectives

To determine hospital frequency, to describe the clinical and therapeutic aspects and to determine the prognosis.

3. Material and Method

This was a retrospective and prospective study carried out in the General Surgery Department from 1 January 1999 to 31 December 2015. Inclusion criteria: 1) open or closed trauma of the abdomen with perforation of the small bowel; 2) clinical examination (abdominal pain, vomiting, fever, abdominal contracture, evisceration, intraoperative findings); 3) paraclinical examinations: pneumoperitoneum on the X-ray of the abdomen without preparation (ASP) and CT scan. Exclusion Criteria: Abdominal trauma without perforation of the small bowel. We selected 128 patients operated for traumatic perforation of the small bowel. The data was entered and analyzed using Word, Excel 2007 and Statistical Package and Social Science Windows 16.0. The statistical analysis consisted in the calculation of the different frequencies of the variables studied. We used the Khi2 test with significance level $P < 0.05$.

4. Results

We recorded 119 men versus 9 women and the sex ratio was 13.22. The mean age was 25 years with extremes varying between 15 and 70 years. The majority of patients 57.7% (74 cases) came from the capital, 46.1% (59 cases) were workers, 26.6% (34 cases) of the students. The average time to admission was 29 hours. The main etiologies were road traffic accidents 36.7% (47 cases), stabbing 21.9% (28 cases), firearm 14.8% (19 cases), and sports accidents 10.1% (13 cases). The main clinical signs were abdominal pain 48.44% (62 cases), abdominal contraction 60% (76 cases), disappearance of pre-liver dullness 66.36% (84 cases), Douglas painful 74.4% (94 cases). The abdominal X-ray without preparation (A.S.P) allowed to objectify a pneumoperitoneum in 45.31% and the scanner a liquid effusion in 45.31% with the associated lesions in 37.5% (48 cases). The surgical treatment consisted of 60.15% suture excision (77 cases), 25% anastomosis resection (32 cases) and a 15% stoma (19 cases). The average length of hospital stay was 9 days with extremes of 1 to 60 days. The morbidity was 10.15% at the site of surgical site (OS) infection 17.4% (8 cases), postoperative peritonitis 3.1% (4 cases) and evisceration 0.8% (1 case). Mortality was 17.18% due to septic shock and multivisceral failure.

5. Comments-Discussion

Traffic accidents are among the main causes of abdominal trauma, both in western and developing countries [2]. The big cities are places of great criminality and banditry with armed attacks. Trauma to small bowels is frequently observed in penetrating wounds in the abdomen [3]. The frequency of 7.85% compared to the total abdominal trauma observed in our study is not different from that of the literature ranging from 6.17% to 12.6% [4] [5] [6].

The juvenile population is exposed to the phenomenon of banditry and the vagaries of traffic, especially in countries where the car fleet increases with a precarious road situation associated with the drivers' incivility. The average age of 25 years of our patients is young and can be superimposed on that of the literature [4] [5] [6] [7] [8]. The young age of our patients is explained by the fact that they account for 55.2% of the population, according to the latest demographic survey EDS 2012. We recorded more men than women with a sex ratio = 13.22. This could be related to the socio-occupational activities of man in the working life. Road traffic accidents 36% (47 cases) were the common cause followed by stabbing 21.9% (28 cases) and on fire 14.8% (19 cases). In Nigeria (63.6%) and the United States, firearms have been the cause of traumatic perforation of the small intestine because of their availability, easy access, handling and because of the authorization of weapons in the USA where crime is high [9]. Patients were admitted for posttraumatic abdominal pain in 48.44% followed by the penetrating wound in 22.6% of patients. Admission time is an important factor that can greatly influence therapeutic management and prognosis [10]. The longer it is, the greater the chance of survival [11]. Significant additional mortality was reported for intervention delays beyond the eighth hour [12]. It was 29 hours in

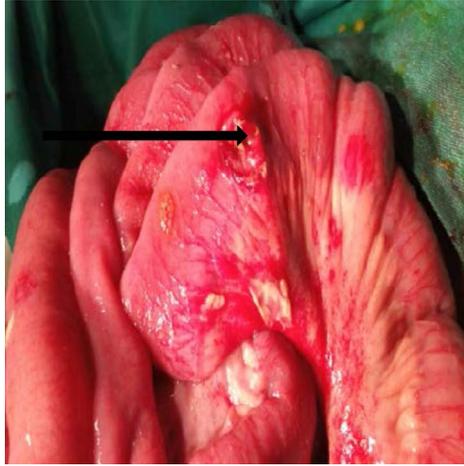
our study and from 13 hours to 73.2 hours in other African studies [2] [7] [13]. This delay in care in Africa may be linked to the lack of pre-hospital medicine, the lack of SAMU teams and the under-provision of civil protection services in our country. The signs of traumatic perforation of the small bowel are those of the peritoneal syndrome. Pain is the major constant functional sign in traumatic perforation of the small bowel [14] [15]. It was recorded in more than half of our patients 92.4%. Physical examination is a crucial time in these abdominal traumatized. All our patients showed signs of acute peritonitis, which varies in the literature between 52.63% and 82.2% [4] [7] [16]. The sensitivity of SPA is low; It allows the diagnosis of rupture of hollow organs in less than 50% of cases [17]. A negative search for gas effusion does not indicate an absence of hollow organ perforation. These images also reveal indirect signs of intraperitoneal effusion (diffuse grisaille, inter-anal spacing, the fuzzy limits of the psoas) [17]. We recorded 45.3% (58 cases) of pneumoperitoneum, which is no different from the Senegalese and Indian series [13] [18]. Pneumoperitoneum is radiologically indicated by the presence of an inter-hepato-diaphragmatic gaseous crescent which indicates the perforation of an intra-abdominal hollow viscus [17].

The scanner of today is the imaging method of choice for the exploration of the abdomen in emergency. It is reliable in the analysis of associated lesions and in the assessment of hemoperitoneum. Among the computed tomodensitometric signs of an intestinal or mesenteric lesion, there may be mentioned: a thickening of the digestive tract wall, a mesenteric hematoma, a striated appearance of the mesentery or of the colon and an extravasation of the intravenous contrast agent [19] [20] [21]. It was performed in 7 patients (5.46%) and identified a pneumoperitoneum in 6 patients (85.7%) associated with splenic contusion in 2 cases. The low rate of achievement of this review is due to the non-availability at all times and its inaccessibility due to the low income of certain patients.

It was a closed trauma in 62.5% (80 cases) and opened in 37.5% (48 cases). The perforations were unique 47.6% (61 cases) (**Picture 1** and **Picture 2**), multiple 52.3% (67 cases) (**Picture 3**), evisceration and traumatic section (**Picture 4**). with an average diameter of 1 cm sitting on the jejunum-ileum in 96.8% (124 cases) as against 3.1% (4 cases) duodenum.



Picture 1. Traumatic perforation of the jejunum on abdominal contusion by kick.



Picture 2. Traumatic perforation of the small intestine on abdominal contusion by kick.



Picture 3. Multiple perforations per abdominal penetrating wound per stab: operative piece.



Picture 4. Evisceration and traumatic section of the small bowel, patient on arrival.

These lesions could be explained by the length of the jejunum-ileum, its mobility, the violence of the trauma and the mechanism of the vulnerable agent in the abdomen.

The different surgical procedures performed depended on the general state of the patient, the nature of the lesions and the duration of the progression, which influence the prognosis but also the surgical technique. We performed an excision-suture 60.2% (77 cases), an anastomosis resection 25% (32 cases) and an internal derivation 14.8% (19 cases). These different therapeutic attitudes can be superimposed on those of the Indian, Senegalese and Malagasy series [6] [8] [13]. The morbidity was 10.2% with parietal suppuration type 17.4% (8 cases), postoperative peritonitis 3.2% (4 cases) and evisceration 0.8% (1 case). Mortality was 17.2% (22 cases) comparable to those reported by the Nigerian and Nigerian authors between 7.5% and 21.1% [5] [16]. Factors influencing mortality were: the character of the emergencies, duration of progression, associated lesions, patient status, nature of the vulnerable agent.

The duration of hospitalization is a function of the lesion severity, the therapeutic option, the associated lesions. It is especially longer in cases of polytrauma [22].

The duration of hospitalization of 9 days of our patients does not differ from those found in the series varying between 5 and 9 days [23] [24].

6. Conclusion

Traumatic perforations of the small bowel are frequent in juvenile environments. Road accidents and armed attacks are the main causes. Morbidity and mortality is important and related to the delay in diagnosis and management.

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