



Open Journal of Surgery

Original Article

Epidemiological and Clinical Profile of Patients with Blunt Abdominal Trauma at Aristide Le Dantec Hospital of Dakar - ②

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Submitted: 12 December 2019; Approved: 04 January 2020; Published: 08 January 2020

Cite this article: Ndong A, Gueye ML, Thiam O, Sow O, Diop A, et al. Epidemiological and Clinical Profile of Patients with Blunt Abdominal Trauma at Aristide Le Dantec Hospital of Dakar. Open J Surg. 2020;4(1): 001-004.

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ABSTRACT

Background: Trauma is a real public health issue, being the third leading cause of death in the world. Blunt Abdominal Trauma (BAT) represents a significant part of these traumas and constitutes a diagnostic and therapeutic challenge. The aim of this study is to determine the epidemiological and clinical profile of BAT in the Department of General Surgery at Aristide Le Dantec Hospital.

Patients and methods: This was a retrospective and cross-sectional study from January 2012 to March 2017. Patients who were more than 15 years old with BAT were included. The studied parameters were: age, gender, delay of admission, etiology of the trauma, clinical signs, organ injury, type of treatment and evolution.

Results: Thirty-seven patients were included. The mean age was 34.8 years \pm 13.5. There were 35 men and 2 women. The etiologies were dominated by road traffic accidents (54.1%, $n = 20$) and assaults (21.4%, $n = 8$). Abdominal pain was found in all patients (100%, $n = 37$). It was associated with vomiting and fever in 32.4% ($n = 12$) and 27% ($n = 10$), respectively. There was no hemodynamic instability in the majority of cases (89.2%, $n = 33$). The most frequently injured organ was the spleen (16.2%, $n = 6$) followed by the liver and intestines each in 13.5% of cases ($n = 5$). Extra abdominal injury was noted in 32.4% of the cases ($n = 12$).

Conclusions: The patient profile in our study was a young man victim of a road traffic accident. The most injured organ was the spleen followed by the liver. A good knowledge of this profile can be helpful to reduce the incidence and mortality associated with these injuries.

Keywords: Trauma; Epidemiology; Abdomen; CT Scan; Surgery

INTRODUCTION

Trauma is a real public health issue because it is the third leading cause of death in the world regardless of age (5 million deaths per year) [1,2]. In developing countries, this mortality is higher, up to twice compared to other countries [2]. Abdominal trauma represents a significant part of these traumas and constitutes a diagnostic and therapeutic challenge. In fact, after the head and the limbs, the abdomen is the third site most affected by trauma [3].

Blunt Abdominal Traumas (BAT) account for 90% of these injuries (compared to penetrating) [4]. BAT can be isolated or associated with others, in the case of polytrauma. Indeed, their frequent association with other traumas, requires an adequate clinical evaluation to avoid additional morbidity and mortality. A good knowledge of these patients' profile could help improve the prognosis. The aim of this study is to determine the epidemiological and clinical profile of BAT in the Department of General Surgery at Aristide Le Dantec Hospital.

PATIENTS AND METHODS

This was a retrospective and cross-sectional study from January 2012 to March 2017 in the Department of General Surgery at Aristide LeDantec Hospital of Dakar. Patients who were more than 15 years old with BAT were included. To study the profile of these patients, the studied parameters were: age, gender, delay of admission, etiology of the trauma, clinical signs, organ injury, type of treatment and evolution. Qualitative variables were described in number with proportion, quantitative variables as mean with standard deviation. Data analysis was done by SPSS software version 23 and Microsoft Excel 2010.

RESULTS

Thirty-seven patients were included. The mean age was 34.8 years \pm 13.5. The age range distribution is shown in figure 1. There were 35 men and 2 women (sex ratio of 11.3). The average time for admission was 14.1 \pm 23.8 hours. The transfer was made with an ambulance in 37.8% of cases ($n = 14$). The etiologies were dominated by road traffic accidents (54.1%, $n = 20$) and assaults (21.4%, $n = 8$). The distribution of etiologies is summarized in figure 2. Abdominal pain was found in all patients (100%, $n = 37$). It was associated with vomiting and fever in 32.4% ($n = 12$) and 27% ($n = 10$), respectively. There was

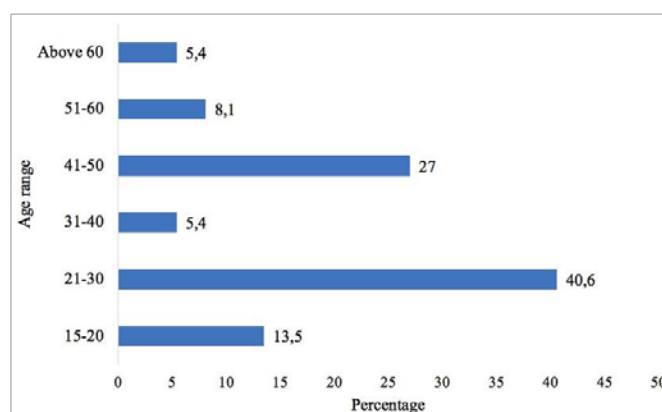


Figure 1: Distribution of patients according to age.

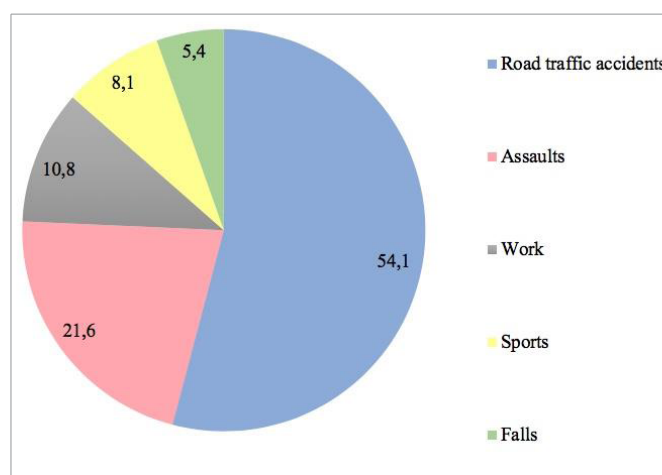


Figure 2: Etiology of blunt abdominal trauma.

no hemodynamic instability in the majority of cases (89.2%, $n = 33$). Physical examination found tenderness in 16.2% ($n = 6$) of cases. No loss of consciousness was found. The distribution of clinical signs is shown in table 1. Leukocytosis was noted in 78.3% of cases ($n = 29$) and anemia in 8.1% of cases ($n = 3$). The existence of abdominal organ injuries was assessed by ultrasound (40.6%, $n = 15$) and / or



CT scan (75.6%, $n = 28$). No organ was injured in 40.6% of cases ($n = 15$). The most frequently injured organ was the spleen (16.2%, $n = 6$) followed by the liver and intestines each in 13.5% of cases ($n = 5$). Extra abdominal injury was noted in 32.4% of the cases ($n = 12$) (Table 2). The distribution of injured organs is shown in figure 3.

All patients had first-line conservative management with appropriate resuscitation. Surgical treatment was done after the failure of conservative treatment in 32.4% ($n = 12$). The mean hospital stay was 11.1 days \pm 9.9. Mortality rate was 2.7% ($n = 1$).

Table 1: Distribution of clinical signs.

Clinical signs	Number	Percentage
Abdominal pain	37	100
Vomiting	12	32,4
Fever	10	27
Hemodynamic instability	4	10,8
Tenderness	6	16,2

Table 2: Characteristics of extra abdominal injury.

Type of extra abdominal injury	Number	Percentage
Thorax	Isolated rib fracture	3, 8,1
	Rib fractures + pulmonary contusions	3, 8,1
	Rib fracture + Pneumothorax	1, 2,7
Head	Superficial hematoma of the scalp	2, 5,4
Pelvis	Pelvic fracture	1, 2,7
	Acetabulum fracture	1, 2,7
Limbs	Open leg fracture	1, 2,7
No extra abdominal injury		25, 67,6
Total		37, 100

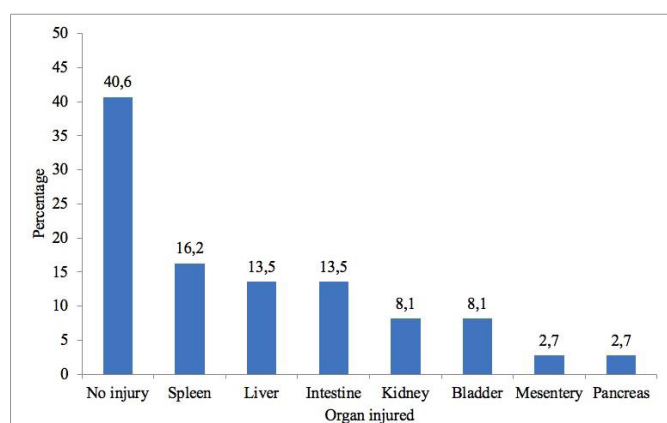


Figure 3: Characteristics of organ injury.

DISCUSSION

After cardiovascular disease and cancer, trauma is the third leading cause of death worldwide [5]. In BAT, all age groups are affected. However, the active population is the most affected. This was the case in our series where the age group between 21 and 30 years was the most represented with 17 cases (45.9%). Besides, men represented 94.5% of all patients. This male predominance is constant in series described in the literature. This is explained by the fact that young men are more exposed to accidents by profession or sports activities [1].

In the literature, the first cause in BAT remains road traffic accidents. Mareed, et al. found this type of accident in 65.5%; as well as Rao, et al. in 52% of cases [1,6]. This could be explained by the poor quality of road infrastructures, bad driving habits or non-compliance with safety instructions [7].

The other most frequent etiologies are assaults, sports or domestic accidents by fall [8].

In BAT, abdominal pain is almost constant like in our study [9]. Indeed, clinical evaluation is very important, because it can exclude warning signs like hemodynamic instability. Other signs such as vomiting, fever or tenderness depend on the existence and severity of the intra-abdominal injury. However, possible loss of consciousness or a context of polytrauma can easily make difficult clinical examination. Clinical evaluation alone is insufficient for a complete assessment. In the Gupta et al. series, more than the third of asymptomatic patients had organ injury [9]. Hence, imaging (ultrasound, CT scan) has an essential role in the diagnostic and therapeutic management.

There was no intra-abdominal injury in 40.2% of the cases in our study. In the literature, these injuries are found only in 12 to 15% of trauma to the abdomen [10]. The most injured organs in our study were the spleen in 16.2% and the liver in 13.5%. Solid organs are the most commonly affected organ in BAT. It is estimated that spleen and/or liver are injured in almost one in four BAT [11]. This is explained by their thoraco-abdominal situation with multiple contacts with the last ribs and other organs. Thus, whatever the mechanism of the trauma (deceleration, direct or indirect trauma), these anatomical characteristics particularly expose these organs to injury [9].

In our study, the intestine was also injured in 13.5% of cases. These injuries are characterized by the late onset of alarming signs, 6 to 12 hours later [12]. In some series of BAT, intestines were the most injured organ [8]. This is explained by the great mobility of intestines and the fact that it occupies a large part of the abdominal cavity [7].

In our study, the most found extra abdominal injuries were rib fractures ($n = 7$) and superficial hematomas of the scalp ($n = 2$). A context of polytrauma is a particular situation and requires multidisciplinary management. BAT can be unnoticed in front of the extra abdominal injuries which are in the foreground. This can easily affect the prognosis. Gupta et al. found mortality of 5% in isolated BAT, compared to polytrauma with a mortality of 41% [9]. Injuries such as cranioencephalic, thoracic or spinal greatly increase the risk of death. The existence and the number of injuries are conditioned by many factors including the mechanism and intensity of the trauma. Its determination permits early management which is an important factor in prognosis [5].

CONCLUSION

BAT remains a public health issue. The patient type in our study is similar to many other series. This profile is a young man victim of a road traffic accident. The most injured organ was the spleen followed by the liver. A good knowledge of this profile could improve preventive, diagnostic and therapeutic strategies. This can be helpful to reduce the incidence and mortality associated with these injuries.

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