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Abdominal Contusions at the Fousseyni DAOU Hospital in Kayes, Mali

Sogoba Gaoussou[1, 2], Katilé Drissa[2, 3*], Sangaré Sidy[1, 2], Traoré Lamine Issaga[1, 2], Dao Arouna[1, 2], Kouyaté Mamaye[2, 4]

[1]General Surgery Department of the Fousseyni DAOU hospital in Kayes, Mali
[2]National Center for Scientific and Technological Research (CNRST), Bamako, Mali
[3]Gastrohepato-Enterology Unit of the Fousseyni DAOU Hospital in Kayes, Mali
[4]Pediatric Surgery Unit of the Fousseyni DAOU Hospital in Kayes, Mali

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***Corresponding author:** Katilé Drissa
National Center for Scientific and Technological Research (CNRST), Bamako, Mali

Abstract | **Original Research Article**

Introduction*:** Abdominal contusion is a closed trauma of the abdomen without continuity between the peritoneal cavity and the outside. The prognosis depends on the severity of the initial injuries but also on the speed and efficiency of their management. In Kayes hospital, there is no data on this traumatic lesion, hence the interest of this study which had as objectives to determine the prevalence of abdominal contusions, the diagnostic and therapeutic aspects. ***Materials and method**:* This is a retrospective study that took place from January 1, 2017 to December 31, 2020 or a duration of 4 years, conducted in the Department of General Surgery of the Hospital Fousseyni DAOU of Kayes. All patients admitted to the emergency department for abdominal contusion, whether isolated or not, and who were treated in the general surgery department during the said period were included. ***Results: During the study period, 1598 patients were hospitalized in the general surgery department, including 42 patients with abdominal contusion, i.e. a prevalence of 2.6%. Our study population consisted of 39 men (92.9%) and 3 women (7.1%), i.e. a sex ratio of 13. The mean age was 21.3 years, with extremes of 8 and 73 years. Thirty-three (78.6%) and nine (21.4%) patients came directly from the emergency department and the general surgery outpatient department, respectively. Road traffic accidents were the primary cause of abdominal contusions, with 24 cases (57%). Consciousness was preserved (GCS 15) in 39 (92.9%) patients. Fever and hemodynamic instability were respectively found in 11 (26.2%) and 4 (9.5%) patients. Emergency abdominal and pelvic ultrasound revealed hemoperitoneum and visceral lesions in 30 (73.1%) and 23 (56.1%) patients respectively. On physical examination, localized abdominal defense was found in 27 (64.3%) patients. Visceral lesions were dominated by hepatic fracture, 7 (30.4%) cases. Non-operative treatment (surgical abstention + medical treatment, strict monitoring/rest) was recommended in 30 patients (71.4%). It was sufficient in 20 patients (47.6%). It was based on the administration of isotonic solution, analgesic, antibiotic therapy and whole blood transfusion. The average length of hospitalization was 4.7 days with extremes ranging from 1 to 11 days. The evolution was considered favorable in 38 patients (90.5%). We noted 6 cases of postoperative complications, 4 of which were simple and 2 cases of parietal suppuration. The mortality rate was 7.1% or 3 cases. ***Conclusion:*** Any abdominal contusion must be considered as potentially severe and therefore lead to a strict clinical monitoring and further investigations. The treatment can be surgical or not, in all cases it must be carried out by specialized multidisciplinary teams.

Keywords: abdominal contusion, Kayes hospital, Mali.

INTRODUCTION

Abdominal contusion is a closed trauma of the abdomen without a solution of continuity between the peritoneal cavity and the outside. It can occur in isolation or as part of a polytrauma [1]. It represents 49% of all abdominal trauma [2].

In Morocco, in 2015 OUNARAIN K reported that abdominal contusions were 36.17% against 63.83% of open abdominal trauma [3]. In a study in Bembéréké-Nord in Benin, in 2013 abdominal contusions were 74.5% and wounds 25.5% [4]. In Mopti (Mali) in 2018, in the study of DJIMDE A abdominal contusions were 68% and abdominal wounds 32% [5]. In the study by DIAKITE in Kayes (Mali) in 2008, contusions accounted for 28% versus 72% of abdominal wounds [6]. The etiologies are dominated by road accidents in 79% of cases, followed by falls from a great height in 12% of cases [7]. Diagnosis requires a careful clinical

examination and codified complementary examinations, based essentially on ultrasound and CT scan. Currently, therapeutic management is often based on non-operative treatment [8]. The prognosis depends on the severity of the initial lesions but also on the rapidity and efficiency of their management. Mortality varies from 1.47% to 12.5% in the different series. No study has been carried out on this issue at the Fousseyni Daou Hospital in Kayes, hence this pioneering study in our structure.

MATERIALS AND METHODS

This is a retrospective study that took place from January 1, 2017 to December 31, 2020, i.e. a duration of 4 years, conducted in the General Surgery Department of the Fousseyni DAOU Hospital in Kayes. All patients admitted to the emergency department for abdominal contusion, whether isolated or not, and who were treated in the general surgery department were included. Patients with incomplete medical records and those who died on arrival were not included. Data were collected from survey forms containing socio-demographic, clinical, para-clinical, non-operative and operative treatment characteristics, evolution during hospitalization. The data were entered in Word and analyzed in SPSS. Statistical tests were the Chi-square test. The significance threshold was set at 005. Free and informed consent was obtained from each participant or his or her parents with strict respect for the anonymity of the survey form.

RESULTS

During the study period, 1598 patients were hospitalized in the general surgery department, including 42 patients with abdominal contusions, for a prevalence of 2.6%. Our study population consisted of 39 men (92.9%) and 3 women (7.1%), i.e. a sex ratio of 13. The mean age was 21.3 years, with extremes of 8 and 73 years. The patients came from the Kayes district, 25 ca or 59.5% (see Table 1).

Table 1: Distribution of patients according to origin

Circles	Workforce	Percentage
Kayes	25	59.4
Bafoulabé	5	11.9
Sadiola	5	11.9
Yélimané	2	4.8
Nioro	2	4.8
Kéniéba	1	2.4
Diéma	1	2.4
Other	1	2.4

Pupils and students represented 15 (35.7%) cases (see Table 2).

Table 2: Distribution of patients according to occupation

Profession	Workforce	Percentage
Pupil/Student	15	35.7
Cultivator	9	21.4
Merchant	5	11.9
Worker	5	11.9
Other	5	11.9
Public servant	2	4.8
Housewife	1	2.4
Total	42	100

Thirty-three (78.6%) and nine (21.4%) of the patients came directly from the emergency department and general surgery outpatient department, respectively. Eighty-nine percent of our patients were brought to the hospital in regular vehicles (see Table 3).

Table 3: Distribution of patients by mode of transport

Evacuation mode	Workforce	Percentage
Ordinary vehicle	34	80.9
Fireman undermining	7	16.7
Motorcycle	1	2.4
Total	42	100

Road traffic accidents were the primary cause of abdominal contusions, with 24 cases, or 57% (see Table 4).

Table 4: Distribution of patients according to etiology of abdominal contusion

Etiology	Workforce	Percentage
Public road accident	24	57
Sports accident	7	16.7
Accident at work	5	11.9
Fall from height	2	4,8
Brawl	2	4.8
Domestic accident	1	2.4
Clogging	1	2.4
Total	42	100

Isolated abdominal contusion in 71.4% (see Table 5).

Table 5: Distribution of patients according to the type of associated injuries

Type	Workforce	Percentage
Isolated abdominal contusion	30	71.4
Thoracoabdominal contusion	6	14.3
Abdominal contusion + pelvic fracture	3	7.1
Abdominal contusion + femoral fracture	2	4.8
Abdominal contusion + head trauma	1	2.4
Total	42	100

Twenty-nine (69%) of our patients arrived within the first 24 hours (see Table 6).

Table 6: Distribution of patients according to time of arrival at the hospital

Deadline	Workforce	Percentage
[0 – 24 hours]	29	69
[25 hours – 48 hours]	5	11.9
[49 hours – 72 hours]	2	4,8
[73 hours – 1 week]	3	7,1
More than a week	3	7,1
Total	42	100

The right hypochondrium was the most frequently affected site with 13 cases, or 30.9% (see Table 7).

Table 7: Distribution of patients according to the site of abdominal contusion

Headquarters	Workforce	Percentage
Right hypochondrium	13	30.9
Left hypochondrium	9	21.4
Umbilical region	9	21.4
Epigastrium	3	7.1
Hypogastrium	3	7.1
Right side	1	2.4
Left side	1	2.4
Left iliac fossa	1	2.4
Right hypochondrium+ (right flank) Right flank	1	2.4
Left hypochondrium + left flank	1	2.4
Total	42	100

Consciousness was preserved (Glasgow score 15) in 39 (92.9%) patients. Fever and hemodynamic instability were respectively found in 11 (26.2%) and 4 (9.5%) patients. On physical examination, localized abdominal tenderness was found in 27 (64.3%) patients (see Table 8).

Table 8: Distribution of patients according to physical signs

Clinical signs	Workforce	Percentage
Abdominal distension	18	42.8
Dermabrasion	18	42.8
Hematoma	2	4.8
Tympanism	2	4.8
Localized abdominal defense	27	64.3
Generalized abdominal defense	15	35.7
Generalized abdominal contracture	12	28.6
Rectal examination (bulging and painful cul de sac of Douglas)	11	26.2

Emergency abdominal and pelvic ultrasound revealed hemoperitoneum and visceral lesions in 30 (73.1%) and 23 (56.1%) patients respectively. Visceral lesions were dominated by hepatic fracture in 7 (30.4%) cases (see Table 9).

Table 9: Distribution of patients according to visceral lesions observed on abdominal ultrasound

Visceral lesions		Workforce	Percentage
Hepatic	Fracture	7/23	30,4
	Hematoma	2/23	8,7
Splenic	Fracture	7/23	21,7
	Hematoma	2/23	17,4
Renal	Hematoma	7/23	8,7
	Breaking	2/23	4,3
Bladder	Breaking	7/23	4,3
Uterine	Breaking	2/23	4,3

Hemopneumothorax with rib fracture was found in 4 (66.7%) of the six patients who had a chest X-ray.

The mean hemoglobin level was 10.4 with extremes ranging from 6 to 14. Whole blood transfusion was performed on admission in 15 patients (35.7%) due to unstable hemodynamic constants. Laparotomy was performed immediately in 12 (28.6%) patients, motivated by signs of peritonitis (8 cases) and hemodynamic instability (4 cases). This laparotomy found 4 (33.3%) cases and 2 (16.7%) cases of jejunal and ileal perforations. The other lesions were transverse colon perforation (1 case), hepatic fracture (segment V) (1 case), splenic rupture (1 case), kidney rupture (1 case), bladder rupture (1 case), uterine rupture (1 case). Non-operative treatment (surgical abstention + medical treatment, strict monitoring/rest) was recommended in 30 patients (71.4%). It was sufficient in 20 patients (47.6%). It was based on the administration of isotonic solution, analgesic, antibiotic therapy and whole blood transfusion.

The average length of hospitalization was 4.7 days with extremes ranging from 1 to 11 days. The evolution was considered favorable in 38 patients (90.5%). We noted 6 cases of postoperative complications, 4 of which were simple and 2 cases of parietal suppuration. The mortality rate was 7.1% or 3 cases.

DISCUSSION

In our study, the mean annual frequency was 10.5 cases. It did not differ statistically significantly from those found in Diakité [6], 7.2 cases and Ouilki [4], 17.6 cases.

The mean age was 21.3 years. Traoré [9] and Ounarain [3] reported mean ages of 31 and 21.7 years respectively. Indeed, young adults are more exposed to road accidents, work accidents, and sports accidents, which are the main causes of abdominal contusions.

In our study, men were more represented than women. This has been found in different series [4, 6, 18]. This male predominance can be explained by the socio-occupational activity that makes men more exposed to the different etiologies of abdominal contusions than women. Road traffic accidents (RTAs) are the first cause.

In our study, MVAs represent the most frequent etiology with 57.1%. This result is lower than those of others [2, 3, 9]. This difference could be explained by the size of the population.

Abdominal pain is the main functional sign found in the different series [3, 9]. Abdominal pain is more often localized than diffuse, whether in isolated abdominal contusion or in polytrauma. It most often follows the projection of the injured organ on the abdominal wall. In our study, it was found in all patients (100%). Vomiting was found in 21.4% of our patients; this result is close to those of Ounarain [3] and Traoré [9]. Macroscopic hematuria is related to a renal or bladder lesion. It was found in 11.9% of our patients, which is not statistically different from the result of Ounarain [3] but superior to that of Traoré [9], the latter being essentially based on hemoperitoneum.

Abdominal distension was found in 42.8% of our patients. This result is higher than those of Ouilki [2] and Ounarain [3]. This difference could be explained by the high frequency of severe visceral injuries in our study.

Abdominal guarding and contracture are due to irritation of the peritoneum. In our study abdominal defense is 35.7% and abdominal contracture 28.6%. These results do not differ statistically from those of Ounarain [3] but are higher than those of Ouilki [2]. This difference could be explained by the high number of cases of peritonitis in our study.

Abdominopelvic CT is nowadays the imaging method of choice for exploration of the abdomen in emergency [2].

However, none of our patients benefited from this examination for reasons of cost and availability. In our study, the splenic involvement was 21.4%, which is not different from that reported by Ounarain [3] but lower than that of Traoré [9]. This difference could be explained by the size of the population.

The hepatic (21.4%) and renal (7.1%) involvement in our study did not differ statistically from those reported by Ounarain [3] and Traoré [9].

Non-operative treatment was considered when the patient's hemodynamic status was stable or stabilized.

In our study 47.6% of the patients had successfully undergone non-operative treatment. This result does not differ significantly from that of Ounarain [3] but is higher than that of Traoré [9]. This difference could be explained by the size of the population.

As for the operative treatment, it was performed in 42.9% of our patients. This result is not significantly different from that of Ounarain [3] but lower than that of Traoré [9]. This difference could be explained by the severity of the lesions diagnosed, which require immediate surgery.

Splenectomy was performed in 66.7% of our patients who had a splenic lesion intraoperatively. This result does not differ statistically from those of Traoré [9] and Ounarain [3]. Non-operative treatment reduced the length of hospital stay of our patients compared to operative treatment.

In our study, the average length of hospitalization was 11.7 days for operated patients and 4.7 days for non-operated patients. These results do not differ statistically from those of Traoré [9] which are 9.8 days (P=0.6) for operated patients and 7.5 days (P=0.07) for non-operated patients.

CONCLUSION

Any abdominal contusion should be considered potentially severe and therefore lead to strict clinical monitoring and further investigations.

The treatment can be surgical or not, in all cases it must be carried out by specialized multidisciplinary teams.

The prognosis of an abdominal contusion depends on the severity of the initial lesions but also on the rapidity and efficiency of their management.

In our context, the difficulties of optimal management are often related to the inadequate conditions of transfer and to the limits of diagnostic and therapeutic means of management.

Conflict of Interest: None

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