

Operative and Non-Operative Hemoperitoneum in Blunt Abdominal Trauma, General Surgery Department, Sikasso Hospital

Traoré, B^{1*}, Diassana, M¹, Diallo, A¹, Coulibaly, M. B¹, Maiga, A², Touré, L³, Traore, T³, Traoré, S. A⁴, Poma, H. A⁵, Dembélé, M. A⁶, Sanogo, A. S⁶, Samaké, M⁷, Traore, O⁸, Kanté, M⁹, Touré, S¹⁰, Dembélé Soumana¹¹, Sidibé, K⁹, Sangaré, M⁹

¹General Surgery Department of Sikasso Hospital, 78RP+GGX, Mali

²General Surgery Department of CHU Gabriel Touré, Bamako, Mali

³Traumatology Department of Sikasso Hospital, 78RP+GGX, Mali

⁴Obstetrics Gynecology Department of Sikasso Hospital, 78RP+GGX, Mali

⁵Pediatric Department of Sikasso Hospital, 78RP+GGX, Mali

⁶Imagery, Sikasso Hospital, 78RP+GGX, Mali

⁷General Surgery Department, Bamako Commune IV District Hospital, Bamako, Mali

⁸Gastroenterology Department, Sikasso Hospital, 78RP+GGX, Mali

⁹Anesthesia and Resuscitation Department, Sikasso Hospital, 78RP+GGX, Mali

¹⁰Dermatology department, Sikasso Hospital, 78RP+GGX, Mali

¹¹Operating Theater Department, Sikasso Hospital, 78RP+GGX, Mali

DOI: [10.36347/sasjs.2023.v09i05.006](https://doi.org/10.36347/sasjs.2023.v09i05.006)

Received: 28.03.2023 | Accepted: 02.05.2023 | Published: 12.05.2023

*Corresponding author: Traoré, B

General Surgery Department of Sikasso Hospital, 78RP+GGX, Mali

Abstract

Original Research Article

Blunt abdominal trauma being one of the most common abdominal emergencies; they explain the patient's indication of armed expectation in the absence of any notion of hemodynamic instability. The objectives were to determine the hospital frequency, to identify the etiologies and to analyze the therapeutic modalities. The study was retrospective and prospective from January 1, 2010 to December 31, 2018 involving 45 patients treated for hemoperitoneum in the general surgery department of Sikasso hospital. All patients admitted to the department for blunt abdominal trauma with hemoperitoneum were included. We collected 45 patients whose mean age was 18.7 years (extreme 3 - 55 years). The sex ratio was 4.6 in favor of men (37 M, 8 F). We found 23 (51.12%) cases of AVP, 13 (28.89%) cases of falls from a height, 11 (7.7%) cases of aggression, hoof kick 1 (2.22%). 19 (42.22%) patients had low haemoperitoneum, 16 (35.56%) medium abundance, 10 (22.22%) high abundance. 32 (71.11%) provided non-operative treatment with a mean hospital stay of 13.7 days (range 5 to 20). 1 patient was unstable, it was activated 24 hours later. We immediately had 12 patients (26.67%) with an average hospital stay of 16.5 days (extreme 10 -24) and the postoperative course was simple in 66.67% (8 cases). We recorded 1 death (2.22%).

Keywords: Hemoperitoneum- Operative treatment and non-operative treatment - Surgery – Mali.

Copyright © 2023 The Author(s): This is an open-access article distributed under the terms of the Creative Commons Attribution 4.0 International License (CC BY-NC 4.0) which permits unrestricted use, distribution, and reproduction in any medium for non-commercial use provided the original author and source are credited.

INTRODUCTION

Hemoperitoneum is the most common complication of blunt abdominal trauma, at 58.7% [1]. It can occur at any age and mainly affects males [2, 3].

The most common etiologies are road accidents (AVP), falls from heights, assaults and sports accidents.

Its clinical diagnosis is based on the hemodynamic state and the paraclinical diagnosis is based on biology and medical imaging. The prognosis

depends on the severity of abdominal lesions, associated lesions, precocity and quality of care.

The treatment can be surgical or not, the choice of which depends on the hemodynamic status of the patient, whether stable or unstable.

METHOD

This was a retrospective, prospective and descriptive study on hemoperitoneum in blunt abdominal trauma, from January 1, 2010 to December

31, 2018 in the general surgery department of Sikasso hospital.

All patients hospitalized in the department during the study period, in whom the diagnosis of blunt abdominal trauma with hemoperitoneum was made on the basis of clinical and paraclinical arguments were included in the study.

Abdominal contusion cases without hemoperitoneum formally retained, and patients with unusable files were not included.

We studied the following parameters:

Sociodemographic data: age, gender, ethnicity, sector of activity,

Clinical features: Consciousness, mucous membranes, blood pressure, abdomen.

Paraclinical data: Hemoglobinemia, hematocrit level, organic lesions objectified on ultrasound and/or CT scan.

The indications for TNO were

Haemodynamically stable hemoperitoneum of low or medium abundance without hollow organ lesions without abdominal compartment syndrome. The stable or stabilized patient is hospitalized in the intensive care unit with strict monitoring of the vital parameters recorded on a monitoring sheet every 15 minutes for three hours, every 30 minutes for three hours, then at longer intervals per day.

A daily paraclinical biological monitoring with the blood count, an abdominopelvic ultrasound performed once a day for the first three days, then once a week until the complete resorption of the hemoperitoneum. A scannographic control once the first week, then after a month.

The indications for TO were

Unstable patients with a BP less than or equal to 8/4mmHg, a fine and thready pulse (greater than 100 beats/min), paleness of the conjunctivae.

The hemoperitoneum was of low abundance if less than 500 ml = (peri-hepatic or peri-splenic chamber), of medium abundance if between 500–1,000 ml (parietocolic gutters), of high abundance if greater than 1,000 ml (cul -de-bag of Douglas).

The patient was considered hemodynamically stable on the following parameters: SBP > 90 mmHg; HR < 100 beats/min; RR < 25 cycles/min; good mucocutaneous staining; partial arterial O₂ saturation (PaO₂) > 98%; hemoglobin > 9 g/dl; Glasgow score = 15.

Data were entered into Excel software and analyzed using Epi Info™6.04 software. The statistical tests used were the Chi² test, a $p < \text{or} = 0.05$ was considered significant:

RESULTS

During our study period, we collected 45 patients, which represented 6.8% of abdominal surgical emergencies, 38% of firm abdominal trauma, 0.71% of hospitalizations. There were 37 men (82.2%) and 8 women (17.8%) with a sex ratio of 4.6. The average age was 18.7 years with extremes ranging from 3 to 55 years. Standard deviation = 14.6. Pupils and students represented 60% of patients.

33 (73.3%) received non-operative treatment and 12 (26.7%) patients were operated on. 95.5% of patients were recruited urgently. The polytraumatized represented 15.56%

AVP in 51.12% (23) was the main etiology. Abdominal percussion was the most common mechanism, 68.8% (31)

The left hypochondrium was the lesion site in 33.3%, (15). The average consultation time was 32.2 hours with extremes of 12 and 72 hours. Standard deviation 7.36.

The average time of care was 4.93 hours with extremes of 04 and 24 hours. Standard deviation 3.96 and 35 (77.7%) patients were treated before 6 am. The pain is located in the left hypochondrium in 60%(27) of cases.

Conjunctival pallor and arterial hypotension were found respectively in 23 (51.1%) and 13 (28.8%) of the patients. The hemoglobin level was less than 10g / dl in (28) 62.22%. Abdominal CT scan was performed in 3 patients (6.67%) of patients, ultrasound and ASP in all 45 patients (100%). Splenic contusion was found on ultrasound in 26 cases (57.7%), subcapsular hematoma in 4 (8.8%) patients, renal contusion in 1 patient (2.2%). Hemoperitoneum was of low abundance in 19 cases (42.2%), of medium abundance in 16 cases (35.5%), and of high abundance in 10 cases (22.2%). Hemodynamically 32 patients were stable and 13 patients were unstable.

Conservative treatment consisted of: diets, analgesics, antibiotics, ice pack, bladder catheterization, blood transfusion (the blood transfusion threshold was set at a hemoglobin level < 7g/dl). The follow-up was simple in 31 of the cases, i.e. 93.9%, with a mortality rate of 3.3%, and treatment failure was observed in one patient, i.e. 3.03%,

(Secondarily operated for abdominal compartment syndrome). The average length of hospital stay for non-operated patients was 13.7 days.

The operative treatment involved 12 patients, the postoperative course was simple in 8 cases (66.6%) and complicated by parietal suppuration in 4 cases (33.3%). We splenectomized 3 patients (25% of operated patients). All splenectomized patients received pneumococcal vaccine, meningococcal vaccine, Haemophilus influenzae type b vaccine, typhoid vaccine.

The average length of hospital stay for operated patients was 16.5 days.

DISCUSSION

After an immediate resuscitation phase, the treatment can remain surgical or non-surgical, the choice of which depends on the hemodynamic status of the patient, whether stable or unstable [4].

Hemoperitoneum represented 6.8% of abdominal surgical emergencies in our study. Studies report 8.4% [5] in Switzerland, 8.8% in Niger [6] and 4.7% in Mali [7]. According to the results, we find no significant statistical difference between our results and those of the other authors ($p < 0.05$).

The mean ages found were that of the young adult in the different series [8-10] and in our study (18.7 years). This could be linked to the increase in two-wheeled vehicles and their preferential use by young adults and the adoption of other risky behaviors. The male predominance of hemoperitoneum in blunt abdominal trauma has been reported by authors [11, 12]. The sex ratio of 4.6 in our patients follows the same observation as other series [13, 14]. This could be explained by the significant participation of men in road traffic and that by professional occupations. The patient's admission time is an important factor, largely influencing the therapeutic management and the prognosis. The average time taken to take care of our patients was 4.93 hours. Road accidents are the most common etiological mechanism [2, 15]. They accounted for 51.2%; this rate is comparable to that found in Mali [3] (57.3%) ($P=0.462826$) but remains lower than those of India [16] (78.1%) ($P=0.000188$) and Benin [2] (79.2%) ($P=0.002844$). The high frequency in Mali could be explained by the unsuitability of the quality of the road network and the incivility of users.

Abdominal pain and reflex vomiting have been observed in many authors [6, 12,16] as in our 100% study.

Arterial hypotension and conjunctival pallor are related to the severity of visceral lesions responsible for haemoperitoneum [11]. They were found in different proportions [3, 5, 9] as well as in ours.

Hemodynamics is the most accurate reflection of the general condition of a traumatized patient and primarily conditions the therapeutic option to be

adopted [14]. 71.1% of our patients were hemodynamically stable.

Ultrasound is a means of diagnosis that can be included in the therapeutic choice of hemoperitoneum, its sensitivity was 100% in our study as in that of certain authors [8, 10].

The more sensitive and more specific scanner for assessing the severity of organ lesions causing haemoperitoneum; was only performed in three patients for reasons of cost and availability.

The spleen seems to be the organ most affected during blunt abdominal trauma, this could be explained by its firm but crumbly consistency as well as its anatomical location in the left hypochondrium and the lack of means of fixity compared to the liver [16].

We found 71.12% splenic involvement which is comparable to that of the authors [4] (69%) ($P=0.804091$), and [2] (66.4) with $P=0.558866$.

Operative treatment of hemoperitoneum is no longer systematic [15]. Our rate of 73.33% of non-operated patients is comparable to that of the author [9] (58%) ($P=0.082354$) but rest differ from that of the author [11] (58%) ($P=0.000001$); This could be explained by the severity of the lesion and the hemodynamic state on admission.

The mortality rate in non-operated patients (3.3%) does not differ significantly from that found in Turkey [17] and India [16]. However, we have had no deaths in our operated patients.

CONCLUSION

Blunt abdominal trauma is becoming more and more frequent due to the high frequency of road accidents (AVP). They affect younger patients. In our context, non-operative treatment with paraclinical investigation methods and armed expectation must be proposed for hemodynamically stable patients. Surgery should no longer be systematic.

REFERENCES

1. Garnier Delamare. (2003). Dictionary of Medical Terms 27, France: Editions Maloine, 374.
2. Mohapatra, S., Pattanayak, S. P., Rao, K. R. R. M., & Bastia, B. (2003). Options in the management of solid visceral injuries from blunt abdominal trauma. *Indian J surg*, 65(3), 263-268.
3. Dasilva, A. S. (1997). Non-operative treatment of hemoperitoneum in children about 32 cases, treated in the pediatric surgery department of Yopougon University Hospital (Abidjan). *Rea care Intens Med urg*, 13(2), 80-83.
4. Goan, Y. G., Huang, M. S., & Lin, J. M. (1998). Nonoperative management for extensive hepatic and splenic injuries with significant

- hemoperitoneum in adults. *Journal of Trauma and Acute Care Surgery*, 45(2), 360-364.
5. Garrigue-Rullier-Lorin, O., Dows, C., Carles, J., Favarel, J. F., & Videau, J. (1996). Non-operative treatment of splenic trauma. Prospective study in adults. *Ann Chir*, 50, 535-536.
 6. ALLI NIGER. (2005). Management of blunt abdominal trauma in Maiduguri: à retrospectivestudy. Department of Surgery, University of Maiduguri Teaching Hospital, Maiduguri, Borno State, Niger, 32, p 45-46.
 7. Zafar, A., Orakzai, N., Ghafoor, A., & Ahmad, S. (2003). Gastrointestinal perforation in children due to blunt abdominal trauma in Hazara, Northern Pakistan. *Tropical doctor*, 33(3), 168-170.
 8. Smith, J., Caldwell, E., D'Amours, S., Jalaludin, B., & Sugrue, M. (2005). Abdominal trauma: a disease in evolution. *ANZ journal of surgery*, 75(9), 790-794.
 9. Bismar, H. A., & Al-Salamah, S. M. (2007). Outcome of Nonoperative Management of Blunt Splenic Trauma. *Kuwait Medical Journal*, 39(2), 144-148.
 10. Mamadou, B. K. (2008). Study of traumatic hemoperitoines at the Somine DOLO hospital in moptia about 32 cases Th Med, Bamako 2007.
 11. Traore, B. (2008). Hemoperitoneum in blunt abdominal trauma in surgery General and Pediatric of the CHU. Gabriel Touré Th. Med, Bamako 2008: No 270
 12. Pruvot, F. (2005). Serious blunt trauma to the liver: in search of decision-making criteria For non-operative treatment, About 88 cases. *Annals of Surgery*, 130, 70-80.
 13. Xeropotamos, N. S., & Nousias, V. E., Ioannou, H. V., & Kappas, A. M. (2001). Mesenteric injury after blunt abdominal trauma. Department of surgery, Faculty of Medicine, Ioannina University, Greece, p 23.
 14. Vyhnanek, F., Denemark, L., & Duchac, V. (2003). Current diagnostic and therapeutic approaches in liver injuries Traumatologicke centrum, Chirurgicka klinika 3. LF UK a FNKV, Praha. *Urg Surg*, p 576-601.
 15. Besson, A., Freeman, J., & Givel, J. (1986). Specificity of high-velocity projectile wounds and their treatment. *Medicine and Hygiene*, 44, p2245-2250.