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Splenic Trauma: Try to save the Spleen in Stable Patients

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Abstract **Original Research Article**

Introduction*:** The treatment of blunt splenic injuries has changed significantly during the last 30 years with the non-operative management (NOM) because it allows preservation of the immune functions of the spleen and avoid complication of splenectomie**.** The aim of this paper is to study the epidemiological, clinical and paraclinical profile, and to undreline the place of the conservative treatment in the management of the splenic trauma. ***Methods: Our work concerned 37 patients victims of splenic trauma, listed in the visceral surgery service, over a period from January, 2013 till December, 2020. The average age of our patients was 33.4 years with a sex-ratio of 3.1. Étiologies was dominated by the road traffic accident 17 (45.9%), followed by falls 9 (24.3%), then by attacks 8 (21.6%) by cutting weapon. The multi trauma context was the most frequent in (95 %). 15 patients were unstable on the hémodynamic shot (40.5%). Ultrasonography was realized at 17 patients (46%) and it showed abdominal effusion in 15 cases (44.1%), CT scan was realized at 32 patients and has showed 19 cases of splénic contusion among which 8 patients were in grade V. 18 patients were operated in emergency (48.6%) (17 cases of hémodynamic instability and 1 with pancreatic trauma). The nonoperative treatment was adopted for 19 patients (51.3 %). The evolution was good at 29 patients (78.4 %). ***Conclusion:*** NOM of patients with spleen injury could be an alternative therapeutic even in case of severe lesions.

Keywords: Splenic trauma – non operative managment – splenectomy.

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INTRODUCTION

Splenic trauma,often secondary to public road accidents is an usual motif of visceral emergency consultations. Splenic injury may occur in isolation or in association with other intra and extra abdominal injury[1].

Computed tomography (CT) has changed their management, allowing for conservative treatment. This attitude reduces the complications of splenectomy and unnecessary laparotomy [2]. Embolization plays a major role, it reduces the risk of failure of conservative treatment without associated morbidity [3]. The aim of our study was to evaluate the feasibility of non-operative treatment of splenic trauma in adults in our context.

METHODS

Our work concerned 37 patients victims of splenic trauma, listed in the visceral surgery service, over a period from January, 2013 till December, 2020. The average age of our patients was 33.4 years with a sex-ratio of 3.1. Étiologies was dominated by the road traffic accident 17 (45.9%), followed by falls 9 (24.3%), then by attacks 8 (21.6%) by cutting weapon.

The multi trauma context was the most frequent in (95 %). 15 patients were unstable on the hémodynamic shot (40.5%). Ultrasonography was realized at 17 patients (46%) and it showed abdominal effusion in 15 cases (44.1%), CT scan was realized at 32 patients and has showed 19 cases of splénic contusion among which 8 patients were in grade V. 18 patients were operated in emergency (48.6%) (17 cases of hémodynamic instability and 1 with pancreatic trauma). The nonoperative treatment was adopted for 19 patients (51.3 %). The evolution was good at 29 patients (78.4 %).

RESULTS

The average of age of our patients was 33,4 ans (17 and 76 years). The sex-ratio was 3,1 men for women. Etiologies were dominated raod trafic (45,9%) followed by falls (24.3%) then by attacks by cutting weapon (21.6%) and other type of assault (8.1%).

72% of our patients were admitted within 12 hours of the trauma, however 1 patient consulted after a delay of more than 72 hours. Abdominal trauma was isolated in 5 patients however, the polytrauma context was the most frequent (32 patients).

78.4% of our patients had a closed trauma while 21.6% had open trauma (table 1) and the graphic summarize the clinical examination of patients.

Table-1: Hemodinamical status and type of lesions

Clinical examinations	n	%
hemodynamic instability	17	45.90%
pain in the left hypochondrium	3	8.10%
Diffuse abdominal sensibility	6	16.20%
Polytrauma	32	95%

Abdominal ultrasounography was performed in 17 malades and objectived abdominal effusion in 15 patients. CT scan was réalised in 32 patients and objectived the hemoperitoneum and splenic involvement in all patients, 8 patients had a stage V (figure 2).

The CT scan also showed 7 cases of hepatic contusions, 5 cases of left renal contusion, 2 pancreatic contusions and a single case of smal bowel contusion.

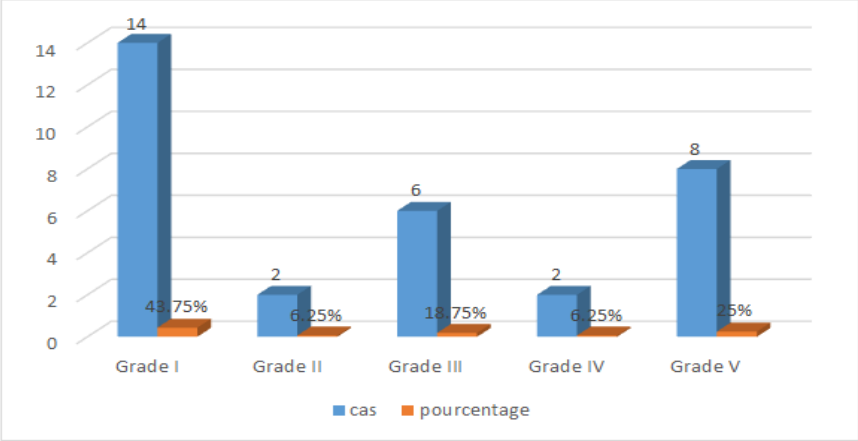

Fig-1: scannographic staging of spleenic trauma

Hemoglobin was below 10 g/dl in 14 patients. Management consisted of hemodynamic conditioning in all patients with blood transfusion in 15 patients.

No patient underwent embolization of splenic artery. We have adopted a conservative treatment in 19 patients (51.3%) stable or hemodynamically stabilized with clinical and para-clinical monitoring.

For patients with NOM the average length of hospitalization was 7 days with extremes of 3 and 15 days. Among the 18 patients underwent emergency surgery17 had hemodynamic instability despite reanimation proceeding.

The postoperative follow-up was marked by 2 acute pancreatitis et 2 cases of pneumonia et 1 case of éviscération et 1 case of parietal abces. 8 deaths were scored.

Table-2: Type of complications

Type of complications	n	%
Acute pancreatitis	2	5%
pneumonia	2	5%
evisceration	1	2%
Parietal abces	1	2%

DISCUSSION

The spleen is one of the most commonly injured organ following blunt abdominal trauma. Splenic injuries may occur in isolation or in association with other intra-and extra-abdominal injury **[1, 4, 5].**

Splenectomy was the only treatment proposed for splenic trauma until 1960. In 1968 Upadhyaya and Simpson proposed Non-Operative Management (NOM) in a study on 52 pediatric patients with splenic trauma **[4].**

Currently**,** conservative treatment represents a major advance in the management of splenic trauma because it preserves the immune functions of the spleen and avoids the complications of unnecessary laparotomy**[6].**

The first classification according to the AAST classified splenic trauma according to anatomical lesions but, sometimes this led to unnecessary laparotomy.

The WSES classification divides spleen injuries into three classes :minor (WSES class I),moderate (WSES classes II and III), severe (WSES class IV)**[7]**.

Low-grade AAST lesions (grades I–III) are considered as minor or moderate and treated with NOM. However, hemodynamically stable patients with high-grade lesions could be successfully treated non-operatively. On the other hand, "minor" lesions associated with hemodynamic instability must be treated with OM. This demonstrates that the classification of spleen injuries into minor and major must consider both the anatomic AAST classification and the hemodynamic status **[7].**

In our department, we have adopted a conservative treatment in 19 patients; with no major complications. Patients who died had other complications of polytrauma.

In our study, NOM was significantly associated with shorter hospital stay **(p=0.022);** less transfusion **(p=0.001)** and not associated with patient age **(p=0.165).**
Some authors proposed a NOM for all patients > 55 years old **[6].**
In our series, there were 2 patients aged 70 and 76 years respectively treated with NOM**.**

Splenic artery embolization is indicated for lesions of AAST grade IV or V with active bleeding on abdominal scan **[3]** in our experience no patient was embolized.

OM should be performed in patients with hemodynamic instability, peritonitis or bowel evisceration requiring surgical exploration**[7].**

Monitoring should be provided in an intensive care unit or a surgical department. In our series, all patients were monitored in the intensive care unit and transferred to the surgical department after stabilization. some authors suggest a control CT scan on day 7 of the trauma **[8].**

The complications of non-operative treatment are secondary hemorrhage, which occurs in 1 to 3% splenic trauma ,splenic abscesses,and pseudoaneurysms of the splenic artery**[2].**

In case of failure of non-operative treatment, laparoscopy can be an alternative to laparotomy in stable patients. This technique allows exploration of the entire abdominal cavity, evacuation of the hemoperitoneum, and identification of the source of bleeding**[9].**

CONCLUSION

Splenic trauma represents one of the most frequent injuries in case of abdominal trauma.. The conservative management represents a feasible and safe therapeutic option also in case of severe polytraumatized patients, this option is only conceivable in the absence of hemodynamic instability or suspicion of perforation with armed surveillance.

Fig-1: Splenectomy

Abréviations
AAST: American Association for Surgery of Trauma
NOM : nonoperative managment
OM : operative managment
WSES : World Society of Emergency Surgery

Conflict of authors: The authors have no conflicts of interest to disclose.

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