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Splenic Trauma as a Result of a Road Accident Involving 5 Cases

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Abstract **Case Report**

The conservative treatment of the spleen represents a major advance in the management of splenic trauma because it helps preserve the immune functions of the spleen and avoid complications of unnecessary laparotomy. In our study, we report the cases of patients whose average age is 30 years, who have consulted the medical and surgical emergency department following a public road accident for the management of a polytrauma resulting in chest-abdominal-pelvic injury. Etiologies were dominated by road accidents, followed by falls, and then assaults. The poly traumatic context was the most common. Two patients were hemodynamically unstable. Computed tomography was performed in all patients and showed splenic parenchymal destruction, classified grade V of the AAST classification. Fluid intraperitoneal effusion of great abundance, associated with a hemooperitone in splenic peri. Nonoperative treatment was adopted. Developments were favorable.

Keywords: Splenic trauma /conservative treatment /non operative treatment.

INTRODUCTION

The spleen is the organ that is full and frequently injured in closed abdominal trauma. These injuries are often secondary to road accidents (MVA) and affect primarily young adults [1, 2]. Currently, the conservative treatment of the spleen represents a major advance in the management of splenic trauma because it helps to preserve the immune functions of the spleen and avoid complications of unnecessary laparotomy [1, 3]. The use of effective interventional radiology techniques will certainly increase the proportion of nonoperative treatments [1].

PATIENTS AND OBSERVATIONS

Case 1

A 40-year-old patient with no significant medical history Admitted to the emergency department for multiple trauma following a public road accident, pedestrian struck by a biker along a sidewalk, causing abdominal pain in the left hypochondria plus scratches in the lower and upper limbs. Evolving for twenty-four hours.

Clinical examination: According to the history the patient knows how to present to the emergency department for a polytrauma following a public road accident causing an initial loss of consciousness, Abdominal pain of the left hypochondrium and scratches of the lower and upper limbs, hospitalized with dechlorination.

Un body scanner: Coupe abdominal

Splenic trauma classified Stage II of the AAST Classification Hepatic, Splenic and Right Parietal Gutter Hematic Effusion Blade, associated with haematic infiltration of right retroperitoneal fat and subcutaneous cellulograph spaces of the homolateral buttock region (Figure 1) Biology assessment: Hb:13.3 versus 13.3 g/dl.

The attitude was the medical treatment of splenic involvement, with clinical monitoring, biology and ultrasound. Favourable development without sequelae.

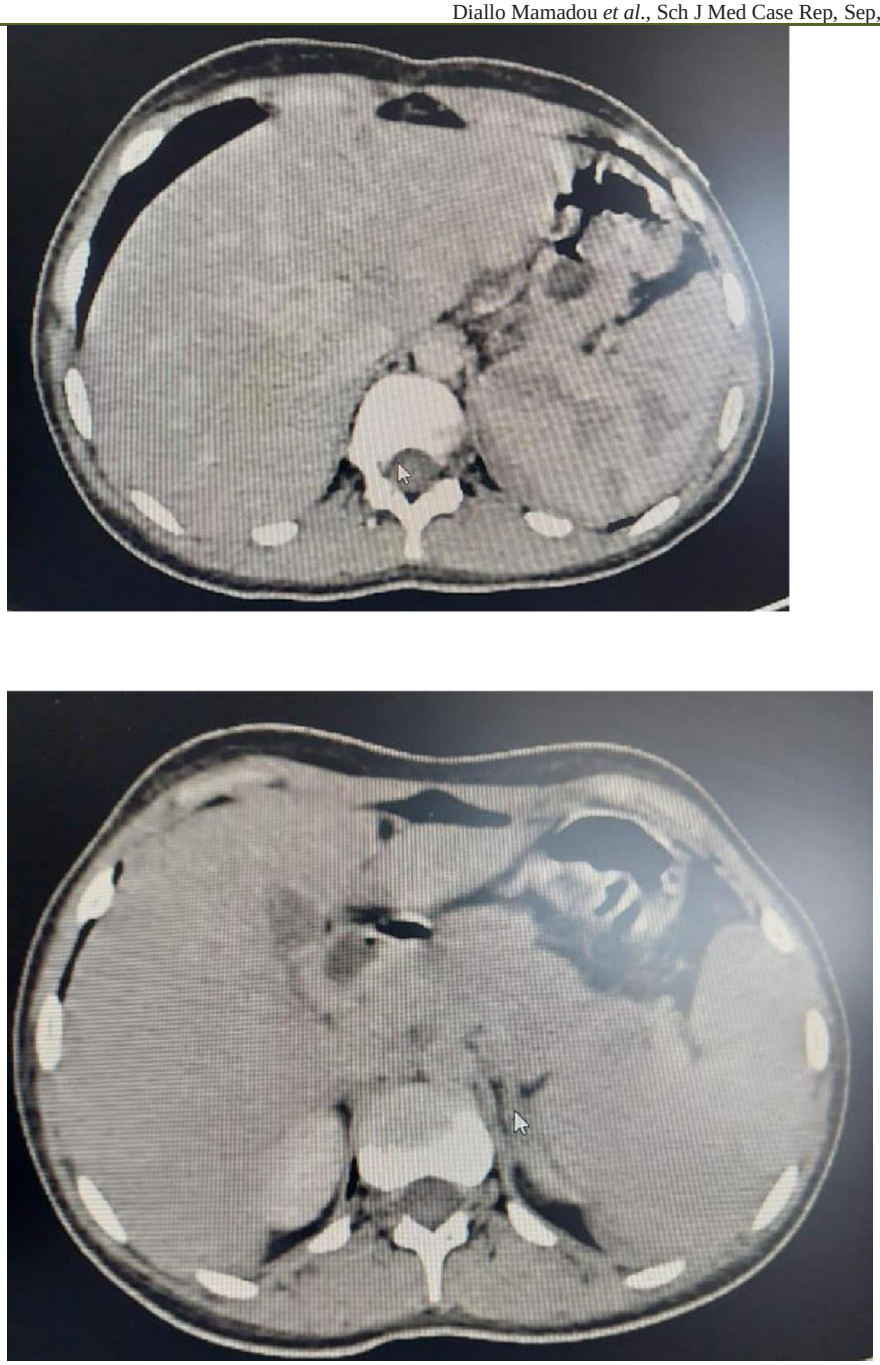

Figure 1: CT image objectifying splenic involvement classified Stage II AAST

Case 2

A 35-year-old man, with no significant pathological history, suffered an inaugural fall in height as a chest and abdominal impact point, resulting in abdominal pain in the left hypochondrium. The patient saw only after 10 days of the fall before the exacerbation of the pain. Clinical examination found a conscious patient with a GCS at 15/15.

An abdominal CT scan showed splenic parenchymal destruction, classified as Grade V of the AAST classification.

Profuse intraperitoneal fluid effusion associated with perisplenic hemooperitone (Figure 2).

Biological balance: Hemoglobin:7.5g/dl, White blood cell:14000G/L, CRP:63mg

Therapeutic attitude was a conservative medical treatment, with a good clinical -biological evolution. Evolution was favorable.

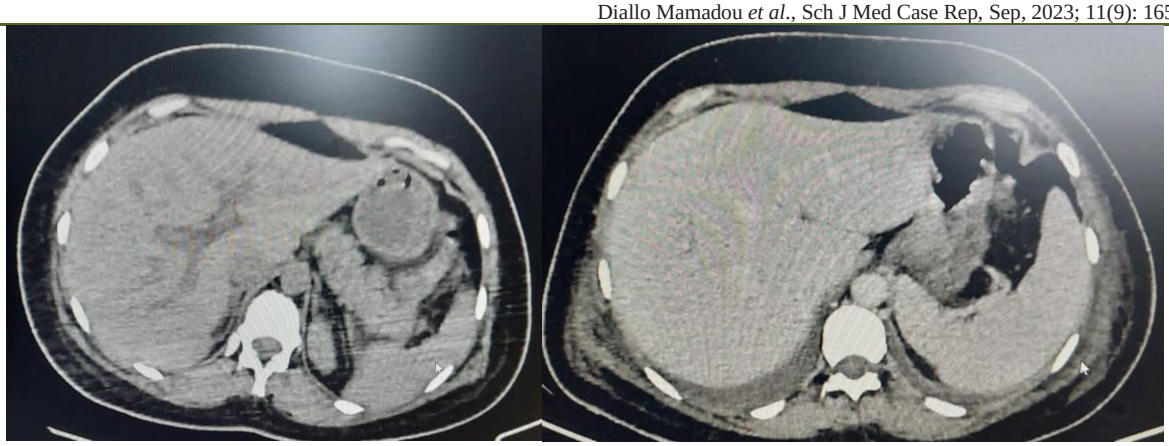

Figure 2: CT image objectifying splenic parenchymal destruction, classified grade V of the AAST classification

Case 3

25-year-old patient with no significant pathological history Admitted for multiple trauma management following a highway accident, fall on his motorcycle, with cranio-impact point abdominal without loss of initial awareness causing intense abdominal pain developing for 02 days. Clinical examination: hemodynamic and respiratory stable conscious patient, Heart rate 90 batt/mn, BP:12/7cmHg, Temperature:37.7.

Abdominal examination: abdominal tenderness in the left hypochondria. Rest of the clinical examination is without particularity.

Abdominal-pelvic CT with contrast injected: Inferior polar fracture, focal laceration and inferior polar contusion classified AAST III. Hemooperitone of low abundance, absence of contrast extravasation at different vascular times (Figure 3).

AAST III Biological Balance: Hb:15g/dl, Gb:10000G/l, Lipasemia:60, GOT:23ui GPT:18ui, PAL:98 ui GGT:60ui BT:5 ui BD:8ui.

Treatment: Hospitalization plus conservative medical treatment, clinical and biological monitoring. Favourable development without sequelae.

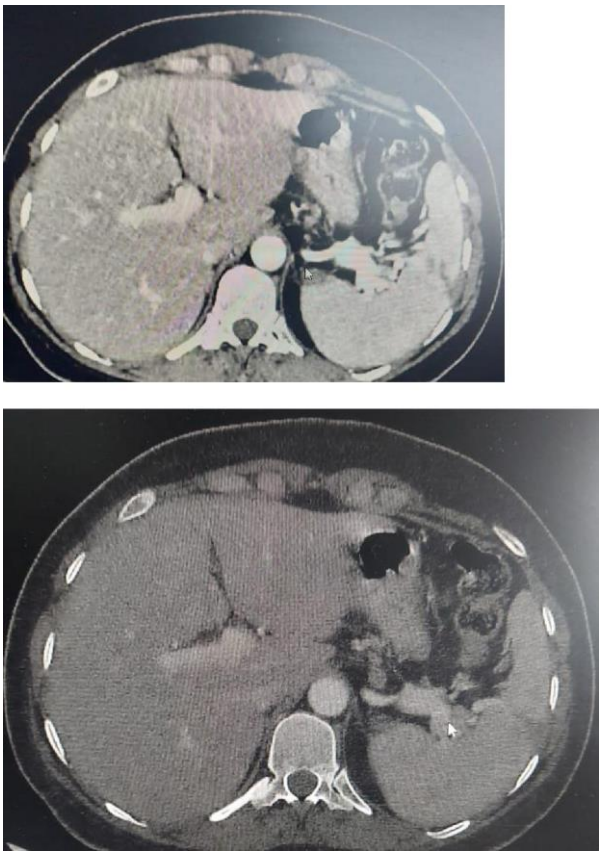

Figure 3: CT image objectifying Inferior polar fracture, laceration focal spot and inferior polar contusion classified AAST III

Case 4

32-year-old patient with no significant pathological history Admitted to ICU for multiple trauma management following a highway accident, a biker hit by a truck, as a point of impact abdominal and cranial causing in him intense abdominal pain, permanent, a scapular wound plus a loss of initial knowledge at day 4 of the trauma.

Abdominal-pelvic scanner: Hematoma next to the lower pole of the spleen, measuring 35x24 mm in diameter, seat of an extravasation of contrast agent increasing late at the expense of a branch of the splenic artery.

Presence of upper mid-splenic and polar laceration foci measured at 2cm, associated with intra-peri-splenic effusion extended to inter-spleen-renal and left parietal-colic gutter, low abundance, high density (Figure 4).

Biology assessment: Hb:9.3 g/dl, CRP:26mg, Grouping O positive Treatment: Vascular filling, Noradrenaline + intubation on neurological criteria

Transfusion by 02 globular units, Analgesic + IPP double dose. Clinical, biological and imaging surveillance. Development favorable to J9 of his hospitalization.

The test scanner before the exit was satisfactory.

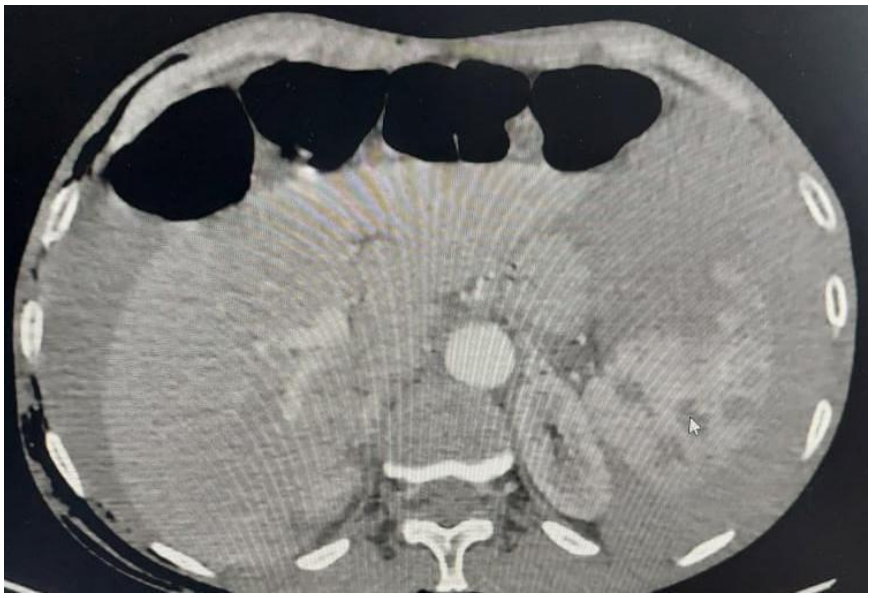

Figure 4: CT image of upper midsplenic and polar laceration measured at 2cm, associated with intra-peri-splenic effusion extended to inter-spleen-renal and left parietoscolic gutter, high-density

Case 5

21-year-old patient with no significant history of pathology Admitted for multiple trauma management following a public road accident, as a chest-abdominal-pelvic impact point following a 12-metre fall (3rd stage) causing initial loss of consciousness, abdominal pain in left hypochondria.

Abdominal pelvic scanner: Stage III classified splenic trauma of the AAST classification associated with a hemoperitoneum of medium abundance.

Bilateral pneumothorax medium abundance on the right and pneumothorax blade on the left

Some foci of pulmonary parenchymal laceration LM and LSD, associated with foci of right pulmonary contusion and LIG (Figure 5).

Biology assessment: Hb:7.7g/dl at admission, transfused by 3 globular cullots

Control hemoglobin:10.7g/dl, White blood cells:10000G/l, Urea:0.12 Creatinia:5 Lipasemia 40, ASAT:23ui ALAT:25ui PAL:90ui GGT:60ui BT:5ui BD:8ui

On the therapeutic level: basic ration, rehydration by the SS 0.9% depending on hemodynamic status, multi-nodal analgesia gastric protection by preventive anticoagulant proton pump inhibitors, dextro monitoring.

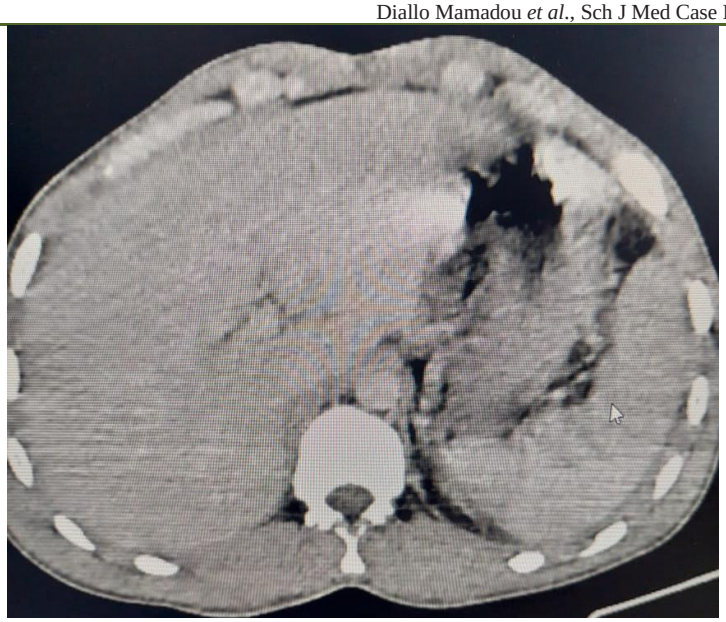

Figure 5: Objective scannography image of splenic trauma classified as stage III of the AAST classification associated with a hemoperitoneum of medium abundance

DISCUSSION

The spleen, encapsulated and fragile organ, is the full organ most frequently injured in closed trauma of the abdomen [1] and its involvement in abdominal contusion is a possibility a both frequent and potentially serious, since the vital prognosis is involved in the continuation of bleeding. Splenic trauma is also a public health concern due to the infectious risk of splenectomy and the binding measures that must be prescribed to prevent the occurrence of serious infections for life. In almost all European publications, stroke is the leading cause of splenic trauma [1-3] in our series we report five casas of splenic trauma where PVA is the main causes, three women for every two men nonoperative treatment should be done in a surgical setting and the term armed surveillance (of a scalpel , in general…) used by Benissa al very accurately characterizes the state of mind required of the all European a surgeon who has taken responsibility for monitoring a traumatized abdomen [4].

CT with contrast injection is the technique of choice for initial examination of hemodynamically stable patients with suspected traumatic splenic lesion [6]. The AAST classification of the American Association for the Surgery of Trauma grades splenic lesions into five stages [5-8]. This classification has a prognostic value and makes it possible to recall the important points concerning splenic lesion and to compare patients in the various studies on therapeutic management. However, it is rarely used in daily practice and has no impact on therapeutic management [6]. In our series all patients have benefited from a body scanner and or a pelvic abdominal scanner with contrast injection: objectifying splenic damage, classified according to the American Association for the Surgery of Trauma classification of splenic lesions in five stages.

Non-surgical treatment (NWT) of splenic lesions can be applied in both adults and children [8]. This attitude has been controversial in the literature, the opposing arguments were the risk of secondary rupture, the risk of formation of pseudo cyst, splebitis and especially the risk of ignoring another intra-abdominal traumatic injury. Currently, several publications have reported that up to 65% of adult closed spleen trauma can be treated in a nonoperative manner with success rates of up to 98% in adults [3]. In our series all patients have benefited from nonoperative treatment, only one patient to benefit from thoracic drainage because of a pneumothorax of great abundance. However, a NWT can only conceive of itself in the absence of persistent hemodynamic instability or perforation of hollow organs [1, 3, 9, 10]. In case of non-operative attitude there remains a controversy in the literature regarding the decision criteria at the outset of laparotomy including: the stage of splenic lesion, the amount of hemoperitoneum, abdominal and extra-abdominal associated lesions abdominals, age and number of transfusions administered [3]. Some authors have argued that an age above 55-60 is also a contraindication to an NWT [11]. In our series all patients were under the age of 50, the conservative treatment was indicated.

In the Gonzales *et al*., series all patients with stage V CT were treated surgically from the start [3]. In our series only one patient had a grade V abdominal CT scan (a splenic parenchymal destruction), of the AAST classification. Having benefited from a medical treatment with clinical and biological monitoring which was favourable. In our series, of the five cases, only one patient had low-abundance pneumodiastin and pneumopericardium CT. Pleural effusion of low abundance in bilateral, more marked right for which it benefited a thoracic drainage by thoracic surgeons, a

favorable evolution within 48 hours then we proceeded to the removal of the drain.

Complications of nonoperative treatment are mainly secondary rupture, which is due to the rupture of a subcapsular hematoma or pseudoaneurysms. It complicates 1 to 3% of non-surgical splenic trauma. In our series all patients benefited clinical, biological surveillance and imaging no complications were detected.

CONCLUSION

In light of the anatomical knowledge of the spleen and due to the occurrence of fatal outcome infection (OPSI) conservative treatment has been developed. Currently, the NWT is certainly effective and must be systematically offered for both adults and children. This option can only be conceived outside of hemodynamic instability or suspicion of hollow organ perforation and in favor of armed surveillance [12]. Monitoring can be based on clinical and ultrasound examination, which requires close multidisciplinary collaboration between emergency physician, resuscitator, radiologist and surgeon.

Conflict of Interest: Authors do not declare any conflict of interest

Contribution of the authors: All authors read and approved the final version of the manuscript.

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