

BLUNT LIVER TRAUMA WITH DAMAGE CONTROL TREATMENT: A CASE REPORT

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Abstract: Liver injury caused by a trauma mechanism can be complex and serious, with a high rate of morbidity and mortality. Damage Control Surgery (DCS) is a rapid intervention that prioritizes hemorrhage control in critically ill patients affected by the triad of death: metabolic acidosis, hypothermia and coagulopathy. This method has five fundamental stages: indication, abbreviated laparotomy, resuscitation of hemodynamic stability, definitive treatment and rehabilitation. This case report aims to describe a patient treated at the General Surgery Service of Hospital Municipal Lourenço Jorge, who was the victim of a blunt abdominal trauma, developing hemodynamic instability and treated surgically to control damage. The patient's clinical condition, the trauma mechanism and the severity of the liver injury are elucidated and analyzed, taking into consideration, the risks and benefits in the indication of CCD and possible conditions susceptible to developing certain complications and/or the lethal triad.

Keywords: damage control surgery, liver injuries, trauma

INTRODUCTION

The liver is the second most common solid organ involved in blunt abdominal trauma. This fact is due to the anterior location of the liver in the abdomen, its fragile parenchyma and the susceptibility of the Glisson capsule to injuries. In this sense, high-grade liver injury is the main cause of death in patients with abdominal trauma and is associated with a high mortality rate (Pillai et al., 2021).

In this context, damage control surgery (DCS) is today one of the main strategies in the treatment of patients with severe traumatic injuries, with critical situations that can progress to physiological failure and, in many situations, death. CCD consists of five stages, namely: indication, abbreviated

laparotomy, clinical resuscitation measures to normalize parameters, surgical reapproach with definitive treatment and rehabilitation (Talah et al., 2023). Thus, it aims to shorten the surgery before the patient reaches the irreversible shock phase, signaled by the “triad of death” which includes metabolic acidosis, coagulopathy and hypothermia.

According to the literature, CCD has become an effective option to reduce the mortality of critically ill patients (Brito et al., 2021). However, to choose the treatment, the patient’s condition, the moment at which the procedure will begin and the experience of the responsible medical team must be assessed, as an incorrect indication can increase morbidity and mortality (Oliveira et al., 2020).

Therefore, the objective of the present work was to report the case of a patient with severe liver injury who underwent damage control treatment.

REPORT OF CASE

Patient, 17 years old, male, was admitted to Hospital Municipal Lourenço Jorge (HMLJ) due to zero vacancy in the Emergency Care Unit (UPA) Cidade de Deus, with report of direct blunt abdominal trauma in the right hypochondrium region (HCD) due to a work accident. On physical examination, he was in a regular general condition, lucid, oriented and pale in color. With vital signs: HR: 70 bpm; BP: 110 x 60 mmHg; Sat: 98% in ambient air; A: patent airways, without neck pain; B: stable chest, without crackles, eupneic on room air; C: painful abdomen on superficial and deep palpation, diffusely with greater intensity in HCD, with peritoneal irritation; stable pelvis; D: Glasgow 15; E: traumatic tattoo in HCD, active bleeding in HCD from non-penetrating injury. In the trauma room, puncture of 2 peripheral accesses, transamin 1g, blood typing, blood count, biochemistry and coagulogram were collected. Fast positive.

Due to the patient’s stability, he was referred for Computed Tomography (CT) with contrast, which revealed a large amount of free fluid, grade IV liver damage and blush in the arterial phase.

The patient developed hypotension, sweating and decreased level of consciousness, and was then taken to the Surgical Center. Intraoperatively, a lesion was found in segments IVb and V, and the Pringle maneuver was performed, identifying a lesion in the hepatic artery on the right, as well as in the hepatic vein and bile ducts. Due to the hemodynamic instability presented by the patient, it was decided to remove the biliary lesion and ligate the arterial and venous lesions, associated with hepatic tamponade with compresses and peritoniotomy.

Following the damage control protocol in the subsequent 48 hours, in which 4 bags of packed red blood cells, 4 bags of plasma, serial blood gases and continuous monitoring were performed. During damage control resuscitation, the patient’s hemodynamic stability improved and the peritoniotomy showed secretion with a bilious appearance.

A re-approach and definitive surgery were carried out in the second stage and a lesion was noted in the branch of the right hepatic duct, and there were no signs of active bleeding. Refraction of the biliary lesion, cholecystectomy and drainage of the abdominal cavity were performed.

The patient progressed satisfactorily with a small fistula that resolved with conservative treatment and was discharged from the hospital with outpatient follow-up after 20 days.

DISCUSSION

Severe liver injuries (grade IV/V) often present as extreme and critical situations. CCD is a strategy and a therapeutic option, as presented and demonstrated in this case, it is an important resource to be used in these situations. However, this is not a new technique, but an approach to prevent the evolution of hemorrhagic shock and its possible stage of irreversibility (Freitas, et al., 2023).

According to the classification of liver injuries by the American Association for the Surgery of Trauma, based on tomographic findings, grades IV and V are complex injuries that present hematoma, laceration and vascular involvement. The primary initial approach is to stop bleeding, as the liver is an organ prone to bleeding that can quickly lead to serious clinical complications that are associated with high rates of morbidity and mortality.

The patient in question suffered a high-intensity trauma in the upper abdomen, which was initially stable, making it possible to perform CT with contrast, in which there was the presence of blush in the arterial phase and a significant volume of free fluid in the abdominal cavity. However, it quickly evolved with hemodynamic instability, as a result of the grade IV injury seen in the image.

The presence of hemodynamic instability with the warning signs present in the case, such as hypotension, sweating and reduced level of consciousness, represent a cycle of mortality related to metabolic imbalance and physiological exhaustion. Therefore, an immediate intervention to control bleeding was discussed among the surgical team, laparotomy was adopted and later, after the patient was stabilized, definitive surgery was performed. Despite possible complications, the imminent risk of death for this patient was high compared to the small fistula he

developed, which was treated conservatively.

In this sense, in a retrospective study carried out by Pimentel et al. (2018) survival was 80.4% in patients suffering from penetrating or blunt trauma who underwent CCD. It is worth mentioning that the authors also mention that the prognosis of CCD is better when the physiological changes are smaller. Despite the risks, the purpose of the CCD is to increase the possibility of survival for critically ill patients. However, there is no clear criteria or established protocol regarding the indication of this method, with the surgeon being responsible for evaluating all circumstances, the physiological state of the patient, the trauma mechanism and the severity of the injury (Talah, et al., 2023).

Therefore, the CCD measure adopted brought a greater probability of survival for the patient. Despite the long hospitalization and multiple surgical interventions, susceptibility to complications and in-hospital infections, the patient evolved favorably and could be followed up on an outpatient basis for rehabilitation. Furthermore, it is worth noting that when operating on patients with severe liver injuries, surgeons must be familiar with CCD techniques in order to provide the best possible result.

FINAL CONSIDERATIONS

The CCD strategy proved to be effective, as described in the literature. This way, a reduction in metabolic imbalance and physiological exhaustion can be observed, thus avoiding the lethal triad, and increasing the patient's probability of survival. Therefore, despite the risks, the service's experience demonstrates that it is possible to use CCD as an option for an emergency situation in patients with severe liver damage.

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