

## RARE CASE OF SEVERE MULTIPLE TRAUMA BY CAR ACCIDENT

CIPRIAN TĂNĂSESCU<sup>1</sup>, MIHAI FAUR<sup>2</sup>, DENISA BOARIU<sup>3</sup>

<sup>1,3</sup>“Lucian Blaga” University of Sibiu, <sup>2</sup>Clinical County Emergency Hospital of Sibiu

**Keywords:** polytrauma, road accidents, injury, severity

**Abstract:** Increased traffic in the world, and in our country as well, and increasing speed, uncorrelated with the construction of highways have led to a high number of road accidents with extremely serious consequences, and deaths. Along with polytrauma by work accidents, they require complex surgical therapy in due time, often multidisciplinary, which often places the surgeon in the face of situations that are not found in the everyday practice. This article presents the case of a 43-year-old patient, victim of a car accident, who has suffered closed multiple trauma. This case is of interest due to the severity of injury, but also due to intraoperative surprises.

### CASE REPORT

We present the case of L.Z., aged 43, who is brought to the Emergency Room on 27.09.2015 by the Mobile Emergency Service for Resuscitation and Extrication (SMURD) with malaise, shocked, disoriented spatially and temporally, accusing pain in the left hemithorax, diffuse abdominal pain of high intensity, tachycardia, tachypnea, dyspnea and hypotension, symptoms resulting from a road accident.

The assessment made with special equipment and systems highlights an acute closed brain injury with multiple facial scarring, left hemithorax subcutaneous emphysema hemithorace left, normally built thorax, asymmetric to breathing movements, painful in the left hemithorax when inhaling and exhaling, decreased tubular breath, vesicular murmur absent in the left hemithorax and accentuated at the level of the right hemithorax, right pulmonary sonority absent in the left hemithorax, percussion dullness in the left hemithorax, multiple excoriations in the anterior and posterior region of both hemithoraces; abdomen above the xifo-pubin level, painful diffuse spontaneously and on palpation, presence of hydroaeric noises, present signs of peritoneal irritation; excoriations multiple wounds and bruising to the arms and legs.

Within the Hospital Emergency Room, the following examinations were performed:

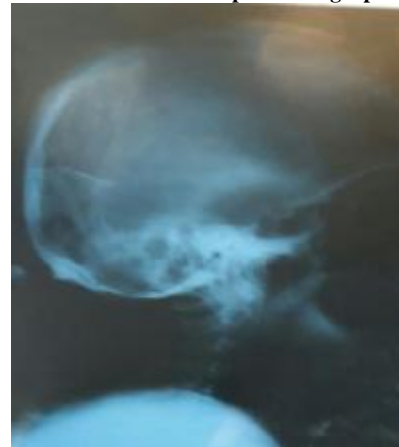
1. Biological samples that highlight:
  - White blood cells (WBC) - 18,600 / ul;
  - Hemoglobin - 10 g / dl;
  - Hematocrit (HCT) -35.6%.
2. Thoracic radiography revealed fracture of the left rib arches IV, V, VI, VII, VIII on the midline axillary line left hemo-pneumothorax with tracheal deviation to the opposite side (figure no. 1).
3. Cervical spine and brain radiograph revealed no pathological changes (figure no. 2).
4. Abdominal ultrasound highlighted haemoperitoneum in large amount, with damage to the spleen, with fluid in Douglas and Morrison's pouches, liver without posttraumatic lesions.
5. Monitoring the vital function was done with:
  - O<sub>2</sub> saturation: 86%
  - Pulse: 123 beats/minutes;

- Blood pressure: 78/54 mmHG;
- Temperature: 36,8 grade C;
- Blood glucose: 130 mg/ dl.

Figure no. 1. Thoracic radiograph



Figure no. 2. Skull and cervical spine radiographs



<sup>1</sup>Corresponding author: Ciprian Tănăsescu, Str. Triajului, Nr. 59, Şelimbăr, România, E-mail: tanasescuciprian@yahoo.fr, Phone: +40722 490048  
 Article received on 09.10.2015 and accepted for publication on 10.03.2016  
 ACTA MEDICA TRANSILVANICA March 2016;21(1):101-103

## CLINICAL ASPECTS

Emergency surgery was performed under general anesthesia with orotracheal intubation, exploratory laparotomy being practiced highlighting haemoperitoneum with evacuation of about 1 500 ml of fresh blood, splenic rupture with active bleeding; left hemidiaphragm rupture with bleeding from the left hemithorax; reason for which splenectomy was decided with splenic adhesions dissection, left hemidiaphragm suture with separate threads, massive lavage, drainage of the spleen lodge, drainage of Douglas pouch, parietoraphy in anatomical layers, Nylon yarn 10 to the skin.

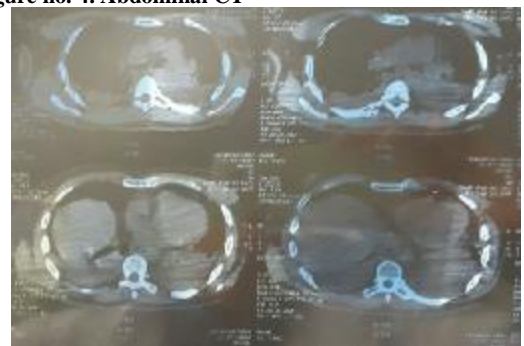
Minimally aspirative left pleurotomy was practiced for the left hemo-pneumothorax with the introduction of the left pleural drainage in the VI<sup>th</sup> intercostal space on the left midline axillary with an average discharge of about 2 000 ml of blood and pleural drainage tube connection to the continuous aspiration.

Postoperatively, thoraco-abdominal Computed Tomography (CT) was performed, showing minimum blade of left anterior and basal pneumothorax and bilateral posterior and basal pulmonary condensations (figure no. 3), small remaining collection after surgery under the left diaphragm (figure no. 4), left rib fractures IV V, VI, VII, VIII left (figure no. 5), cerebral edema (figure no. 6).

**Figure no. 3. Thoracic CT**



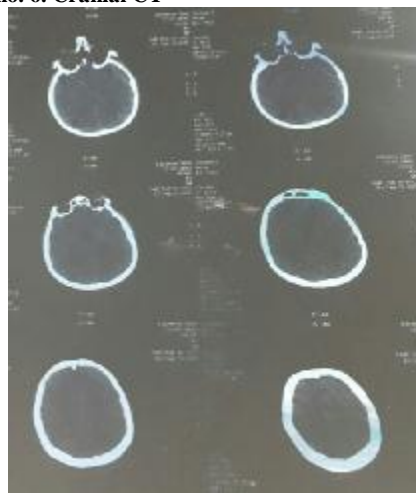
**Figure no. 4. Abdominal CT**



**Figure no. 5. Thoracic CT**



**Figure no. 6. Cranial CT**



Postoperative evolution of the patient was favourable, the patient being afebrile, stable in terms of hemodynamics and cardiorespiratory, with soft, mobile abdomen, painless to palpation, permeable drainage tubes with minimal sero-sanguiviolent drainage and its suppression on the 8<sup>th</sup> day postoperatively, permeable pleural drainage and its suppression on the 7<sup>th</sup> postoperatively and the remission of the cerebral edema.

The patient was discharged in good general condition with the following recommendations:

- to avoid physical exercises;
- pneumococcal polysaccharide vaccination;
- thoraco-abdominal CT after one month;
- surgery re-evaluation when needed.

## DISCUSSIONS

Blunt abdominal trauma is a leading cause of morbidity and mortality among all age groups. Identification of serious intra-abdominal pathology is often challenging; many injuries may not manifest during the initial assessment and treatment period.(1)

Thoraco-abdominal injuries provide a major contribution to death because the bony thoracic cage contains vital organs of circulation and respiration and trauma to these organs challenges the integrity and viability of entire human body. Similarly, the abdomen is the third commonest region of body that is injured in civilian trauma, as human abdomen is largely unprotected by bony structure which contains numerous important vital organs like liver, spleen, kidney, pancreas and hollow viscous like stomach, intestines and urinary bladder etc.(2)

Thoraco-abdominal trauma involves both cavities: the chest and the abdomen together with injury to the diaphragm. These can be open or closed. In our case, the thoraco-phreno-abdominal wound was closed, and the traumatic brain injury which was added complicated even worse the situation. Because of diaphragmatic rupture, some of haemoperitoneum penetrated the cavity of the left hemithorax, adding the haemothorax produced by the rib fractures and leading to lung collapse in the hilum.

In these cases, it is very important to set the diagnosis as early as possible in order to be able to stop the bleeding, as well as the type of approach.

Thoracic, abdominal or mixed approach will be chosen depending on the trajectory of the foreign body and severity of lesions produced at intrathoracic or intra-abdominal

## CLINICAL ASPECTS

---

level. In general, in acute diaphragmatic lesions, transabdominal approach is preferred by median laparotomy, because it also enables evaluation and the surgery of the associated abdominal injuries. In case of diaphragmatic dormant injuries, lasting for several months or years, thoracic approach is preferred that is much easier.(4) In our patient, we chose for the abdominal approach, taking into account the ultrasound diagnosis of massive haemoperitoneum and the patient's altered condition did not allow us to delay the intervention until performing the CT. Intraoperative surprise was the association of spleen rupture with diaphragm rupture. We successfully managed the suture of the diaphragm, followed by performing the minimum left pleurotomy.

Singular occurrence of diaphragmatic rupture has a 9 degree risk on the Injury Severity Score (ISS) scale (5), which correlates with a survival coefficient of 0.99, but, rarely diaphragmatic injuries are singular. They usually accompany other lesions of the thoracic-abdominal viscera, lowering this coefficient and giving the true mortality of the thoraco-phreno-abdominal wounds. In our case, the association of spleen rupture and acute traumatic brain injury have increased more the seriousness of the case and mortality risk.

Evaluating patients who have sustained blunt abdominal trauma remains one of the most challenging and resource-intensive aspects of acute trauma care.(6,7)

### CONCLUSIONS

Hemodynamic and respiratory stability are the most important initial concerns in the evaluation of a patient with blunt abdominal trauma.

Cooperation between the surgeon and the anesthesiologist is essential for therapy success of such a case.

Thoraco-phreno-abdominal wounds, through their complexity and the speed with which decision must be taken can raise serious problems even to a surgical team well trained in emergency surgery.

The care of the trauma patient is demanding and requires speed and efficiency.

### REFERENCES

1. Legome E. Blunt Abdominal Trauma. [www.medscape.com](http://www.medscape.com).
2. Meena DS, Punia RK. Victim Profile in Fatal Blunt Thoraco-Abdominal Injuries in Jaipur Region- Medico - Legal Update. 2014;1:91-95.
3. Tănăsescu C, Pătrușel D, Perișanu St, et al. Caz dificil de plagă toraco-freno-abdominală prin accident rutier, revista Chirurgia. 2011;106(2):256-268.
4. Simpson J, Lobo DN, Shah AB, Rowlands. Traumatic diaphragmatic ruptures: associated injuries and outcome – Ann R Coll Surg Engl. 2000;82:97-100.
5. Baker SP, O'Neill B, Haddon Jr. W, Long WB. The injury severity score: a method for describing patients with multiple injuries and evaluating emergency care. J Trauma. 1974;14:187-96.
6. American College of Surgeons Committee on Trauma. Abdominal Trauma. In: ATLS Student Course Manual. 8th. American College of Surgeons; 2008.
7. Jansen JO, Yule SR, Loudon MA. Investigation of blunt abdominal trauma. BMJ. 2008 Apr 26; 336(7650):938-42. [Medline]. [Full Text].