

THE ABDOMINAL TRAUMATIZED PATIENT BETWEEN EMERGENCY SERVICE AND DISCHARGE

ALEXANDRU LASLO¹

¹University of Medicine, Pharmacy, Science and Technology of Târgu-Mureș

Keywords:

thoracoabdominal trauma, hematocrit, hemoglobin, blood transfusion

Abstract: Due to the changes in major trauma epidemiology, the management of thoracoabdominal trauma evolved in time. The thoracoabdominal major lesions were treated in the past by emergency laparotomy or tocolotomy. The morbidity associated with nontherapeutic laparotomies or thoracotomies lead to an increase of using conservative ways of treatment. We accomplished a retrospective study in which we included 234 patients, all of them diagnosed with thoracoabdominal trauma who were hospitalized in the General Surgery Ward. The objective of this study is to determine whether there is a correlation between the value of hematocrit and hemoglobin at patient admission and the values at discharge, in patients who required blood transfusion during hospitalization.

INTRODUCTION

Trauma represents injuries suffered when a person usually experienced a blunt force. It can be caused by falls, car accidents, aggression, stabbings, gunshot wounds, crush type injuries and the most common car accidents.(1,2)

Traumatic injuries can affect different types of internal organs, bones and soft tissue from the body. Trauma can range from minor to major, depending on the mechanism of the accident.(3,4) Surgical trauma is represented as a part of the general surgery specialization that utilizes both operative and non-operative management to treat traumatic injuries usually in acute setting and normally with the management of the abdominal and thoracic injuries that includes both blunt and penetrating trauma. It also includes any given "Emergency" field that they may be required to serve upon.(1,3,4) It affects people of all ages that can lead to death and serious lifelong disabilities. The majority of traumatic injuries however are preventable and if treated correctly and in time it can lead to a great outcome for the patient.(1) The therapeutic approach of patients suffering from trauma can be challenging. Incoming patients can suffer from either thoracic (blunt/penetrating) or abdominal (blunt/penetrating), also in many cases these injuries can be present simultaneously.

Other anatomical regions of the body can be affected resulting in a multidisciplinary treatment of the patient. Multiple specialties may be required such as vascular surgeon, urologist, neurosurgeon.(2)

AIM

The objective of this study is to determine whether there is a correlation between the value of hematocrit and hemoglobin at patient admission and the values at discharge, in patients who required blood transfusion during hospitalization.

MATERIALS AND METHODS

We conducted a retrospective study in which we

included all the patients diagnosed with thoracoabdominal trauma enrolled in the First Surgical Clinic in Târgu-Mureș Emergency County Hospital between 01.01.2015-31.12.2018.

The data information for the study was collected for each patient by accessing their personal file stored in the hospital archive registry. The results and statistics of the study were organized and analyzed using Microsoft Windows Excel 2016 edition and Graph Pad Prism 6.

The inclusion criteria for the study required that every patient must have in their personal file the following information:

- Name of the patient
- Age
- Gender
- Detailed diagnosis explanation
- Imagistic investigations received in the period of hospitalization
- Mechanism of injury that inflicted the trauma
- Detailed operation protocols
- Discharge diagnosis and hospitalization period
- The need for blood transfusion
- Paraclinical investigations received in the period of hospitalization

The exclusion criteria include patients who do not meet the following requirements:

- Patients who requested transfer from the clinic and did not receive full treatment.
- Patients who refused treatment and were discharged on their own risk.

RESULTS

A number of 234 patients have been enrolled in this study, who met the inclusion criteria and who were diagnosed with thoracoabdominal trauma.

The average age of the patients was 56 years ranging

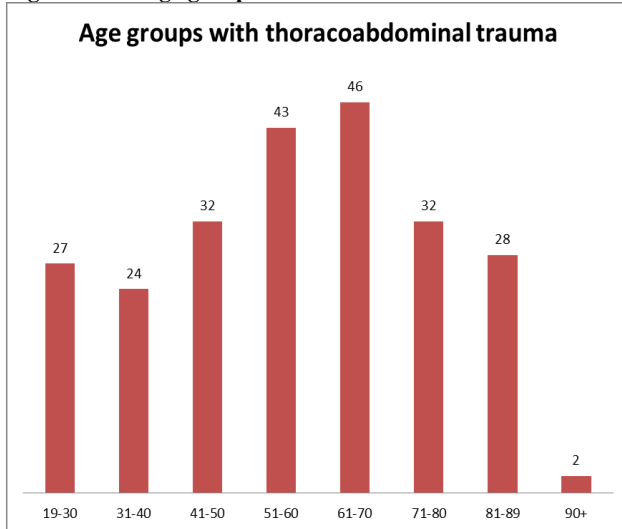
¹Corresponding author: Alexandru Laslo, Str. Brașovului, Nr. 1, Ap. 227, Târgu-Mureș, România, E-mail: alexadru.laslo@gmail.com, Phone: +40747 278866

Article received on 25.04.2020 and accepted for publication on 02.06.2020

CLINICAL ASPECTS

from 19 to 93. The most affected age group was between 61 and 70 (46 cases), followed by 51 and 60 (43 cases). Also, age extremities were represented by 19-30 (27 cases) and 90+ with only 2 cases. We observed a male predominance, 78%, with only 22% female patients.

Figure no. 1. Age groups with thoracoabdominal trauma



The hospitalization diagnosis data analysis has shown the following results:

- Thoracic trauma: 149 cases (64%)
- Thoracoabdominal trauma: 47 cases (20%)
- Abdominal trauma: 38 cases (16%)

The most common mechanism is by car accident, registering a number of 62 cases, followed by falls from the same or another level - 49 cases. In the last place, there are the accidents by self aggression and slipping, 2 cases.

Figure no. 2. Mechanism of injury

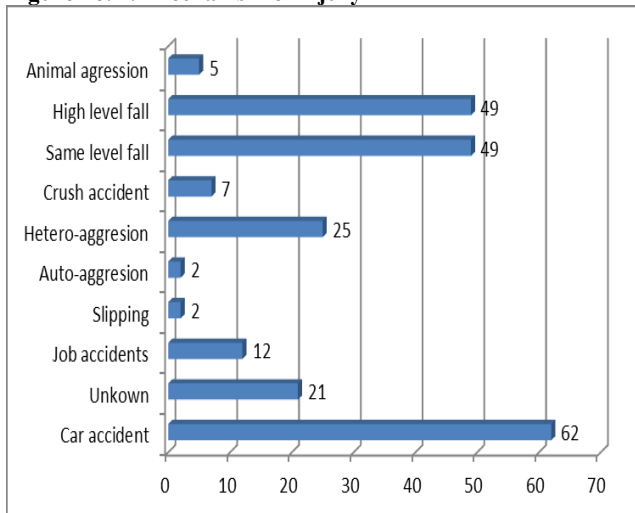


Table no. 1. Hematocrit level in the first day of hospitalization females/males

Females			Males		
Normal 35.9-44.5%	43	68%	Normal 38.8-50%	110	65%
Low <35.9%	23	32%	Low <38.8%	59	35%

The hematocrit levels from the Hematocrit level in the first day hospitalization female/male shows that the majority of the patients are within normal values in the first day of hospitalization: females (68%) and males (65%). The normal values of hematocrit in female patients (68%) have a higher weight compared to those found in male patients (65%) in the first day of hospitalization.

Table no. 2. Hemoglobin level in the first day of hospitalization females/males

Females			Males		
Normal 12-15.5 g/dL	80	84%	Normal 13.5-17.5 g/dL	94	56%
Low <12 g/dL	15	16%	Low <13.5 g/dL	73	44%

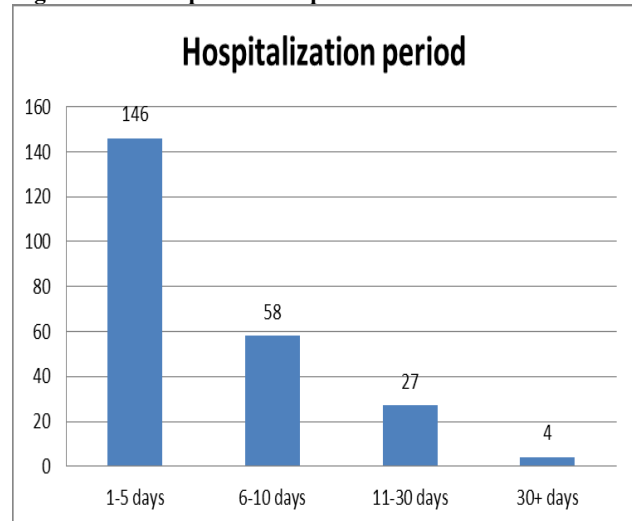
The hemoglobin levels in the first day of hospitalization female/male shows that the majority of the patients are within normal values in the first day of hospitalization: female (84%) and male (56%).

The results obtained in this study regarding the number of patients who received or did not receive blood transfusion are:

- 209 did not receive blood transfusion
- 25 did receive blood transfusion

The predominant group is represented by the patients who were hospitalized from 1 up to 5 days (146 cases) followed by 6 to 10 days with 58 cases, 11 to 30 days with 27 cases and only 4 cases required more than 30 days of hospitalization.

Figure no. 3. Hospitalization period



Based on the protocols and type of injuries suffered by the enrolled patients, the main type of treatment was a conservative one.

Non-operative management was applied in 68% of the cases with the monitoring of vital signs. Surgical interventions were required in 75 cases (32%). The majority suffered from abdominal trauma and the main cause was the car accident. The following procedures were performed: splenectomy, pleural drainage, enterorrhaphy, intestine resection and pancreatic repair, hepatic segment resection, right nephrectomy, cholecystectomy, spleno-pancreatectomy, major vessels hemostasis, inguinal hematoma evacuation related in table no. 3.

Some of the patients required blood transfusion during the hospitalization period (10.68%). In this group of patients who received blood, there is a correlation between the value of

CLINICAL ASPECTS

hematocrit and hemoglobin at patient admission and the values at discharge, in patients who required blood transfusion during hospitalization. After having performed statistical tests, we obtained $p < 0.0001$.

Table no. 3. Main surgical interventions performed

Splenectomy	21
Pleural drainage	19
Enterorrhaphy	12
Pancreatic repair	3
Hepatic segment resection	2
Nephrectomy	1
Cholecystectomy	3
Spleno-pancreatectomy	1
Major vessels hemostasis	4
Inguinal hematoma evacuation	3
Intestine resection	6

DISCUSSIONS

Due to the changes in major trauma epidemiology, nonoperative treatment is increasingly being considered in patients with abdominal trauma. In the past, laparotomy was the first therapeutic approach in the case of a penetrating abdominal wound. In recent years, we have observed the tendency of choosing a conservative management of penetrating abdominal wounds in patients who do not present clinical and imaging signs of visceral lesions.(5,6)

In the last two decades, the proportion of patients with abdominal blunt trauma, treated in a conservative way has increased.(7) This phenomenon is due to widespread introduction of computer tomography diagnosis, the possibility to control the bleeding through embolization after selective arterial catheterization and the better quality of observation and treatment in intensive care units.

In patients who required blood transfusion during hospitalisation, there is an increase in haematocrit and haemoglobin values.

The therapeutic success was due to the multidisciplinary trauma team and also to the fact that the trauma operating room is located within the same hospital. The possibility of using all paraclinical investigations helped the doctors in establishing some diagnosis and implicitly in establishing the therapeutic approach.

Updating trauma protocols as well as training the staff for this type of pathology is essential for better and better therapeutic results.

CONCLUSIONS

The blood transfusion is beneficial for the abdominal traumatized patient who has extremely low levels of hematocrit and hemoglobin during the first day of hospitalization.

The management of the abdominal traumatized patients may be difficult and require multidisciplinary specialities such as vascular surgeon, urologist, neurosurgeon.

Trauma affects people of all ages that can lead to death and serious lifelong disabilities.

The therapeutic success requires experienced medical staff, adapted to the current trauma guidelines but also prompt intervention.

The trauma requires the application of clear and precise protocols, these being easier to apply in specialized trauma centres.

REFERENCES

1. Giannou C, Baldan M. War Surgery Volume 1: working with limited resources in armed conflict and other situations of violence- International Committee of the Red Cross May; 2010.
2. Giannou C, Baldan M, Molde A. War Surgery Volume 2: working with limited resources in armed conflict and other situations of violence- International Committee of the Red Cross March; 2013.
3. Davig GB, Paul JD, Joseph BF, Stephen PH, John BH, Donald HJ, Christoph K, Peter M, Lawrence HR, Department of the Army – Emergency War Surgery (The Survivalist's Medical Desk References) Skyhorse Publishing Inc. New York; 2012.
4. Dahlgren W, Fenton LH, U.S Navy – Special Operations Forces Medical Handbook- Skyhorse Publishing Inc. New York; 2011 978-61608-278-9.
5. Como JJ, Bokhari F, Chiu WC, Duane TM, Holevar MR, Tandoh MA, Ivatury RR, Scalea TM. Practice management guidelines for selective nonoperative management of penetrating abdominal trauma. J Trauma. 2010 Mar; 68(3):721-33.
6. Biffl WL, Kaups KL, Cothren CC, Brasel KJ, Dicker RA, Bullard MK, Haan JM, Jurkovich GJ, Harrison P, Moore FO, Schreiber M, Knudson MM, Moore EE. Management of patients with anterior abdominal stab wounds: a Western Trauma Association multicenter trial, J Trauma. 2009 May; 66(5):1294-301.
7. Beuran M, Negoï I, Paun S, Runcanu A, Venter D, Iordache F et al. [Selective nonoperative management of solid abdominal visceral lesions]. Chirurgia (Bucur). 2010;105(3):317-326.