



Evaluation of the effectiveness of medical care for patients with combined trauma

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ARTICLE INFO

Article history:

Received September 2022

Received in revised form

10 October 2022

Accepted 25 November 2022

Available online

15 December 2022

Keywords:

trauma,
combined trauma,
patient,
diagnostics,
help,
analysis.

ABSTRACT

One of the leading causes of mortality and disability worldwide is trauma. Most disabilities worldwide are due to post-traumatic complications.

Purpose: To make a clinical and statistical analysis of the effectiveness of medical care for patients with combined trauma in the 7th Municipal Clinical Hospital of Almaty

Materials and methods: A retrospective clinical and statistical analysis of 50 case histories of victims and those who were diagnosed with “combined trauma” in the 7th Municipal Clinical Hospital of Almaty was carried out. In the course of the study, we divided the case histories into 3 groups:

1. Patients with traumatic brain injury;
2. Patients with tubular bone injury;
3. Patients with abdominal and chest trauma.

For the analysis, the case histories took into account: gender, age, traumatic factor, the severity of the patient, diagnostic measures, diagnosis, treatment, number of bed days, outcome, and shock index.

Results: The percentage of women was 40% and men 60%. The average number of bed days was 14 days. In 98% of cases, the condition at discharge was assessed as an improvement, the mortality rate was 2%. The first group of patients is 54% of the

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sample (27 cases). In 13 cases, traumatic/hemorrhagic shock was observed in this group. The period of anti-shock therapy averaged 18 hours. In these patients, hemodynamic stabilization occurred on days 4-6, respiratory functions were restored by days 8-10, and laboratory parameters normalized on days 12-14. The second group of patients with tubular bone injury includes 13 patients (26%). In this group, hemodynamic stabilization was observed within 24-36 hours, respiratory functions were restored by days 4-5, and laboratory parameters were normalized by days 8-10. The third group of patients with abdominal and chest injuries is 10 patients (20%). In this group, hemodynamic stabilization was observed within 24 hours, respiratory functions were restored by days 4-6, and laboratory parameters were normalized by days 11-12.

2181-3663/© 2022 in Science LLC.

DOI: <https://doi.org/10.47689/2181-3663-vol1-iss1-pp92-99>

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Оценка эффективности оказания медицинской помощи пациентам с сочетанной травмой по данным 7ГКБ г. Алматы

Ключевые слова:

травма,
сочетанная травма,
пациент, диагностика,
помощь, анализ.

АННОТАЦИЯ

Актуальность: Одной из ведущих причин смертности и инвалидности во всем мире является травма. В настоящее время наблюдается изменение этиологии травматизма и рост случаев, сочетанной травмы в связи и увеличение случаев ДТП, техногенных катастроф и производственного травматизма. Большая часть инвалидности во всем мире приходится на посттравматические осложнения.

Цель: Произвести клинико-статистический анализ эффективности оказания медицинской помощи пациентам с сочетанной травмой в 7 ГКБ г. Алматы

Материалы и методы: Был произведен ретроспективный клинико-статистический анализ 50-ти историй болезни пострадавших и поступивших с диагнозом «сочетанная травма» в 7 ГКБ г. Алматы. В ходе исследования мы разбили истории болезни на 3 группы:

1. Пациенты с черепно-мозговой травмой;
2. Пациенты с травмой длинных костей;
3. Пациенты с травмой живота и грудной клетки.

Для проведения анализа, в историях болезни было учтено: пол, возраст, травмирующий фактор, степень тяжести пациента, диагностические мероприятия, диагноз, лечение, количество койко-дней, исход, шоковый индекс.

Результаты: Из 50 случаев сочетанной травмы, процентное соотношение женщин составила 40%, мужчин

60%. Среднее количество койко-дней составило 14 дней. В 98% случаев состояние при выписке оценивалось как улучшение, летальность составляет 2%. Первая группа пациентов, составляет 54% от выборки (27 случаев). В 13-ти случаях у данной группы наблюдались травматический / геморрагический шок. Период противошоковой терапии составил в среднем 24 часа. У данных пациентов стабилизация гемодинамики приходится на 4-6 сутки, функции внешнего дыхания восстанавливались к 8-10 дню, лабораторные показатели нормализовались на 12-14 день. Вторая группа пациентов, с травмой длинных костей, включает 13 пациентов (26%). В данной группе стабилизация гемодинамики наблюдается в течении 24-36 часов, функции внешнего дыхания восстанавливались к 4-5 дню, лабораторные показатели нормализовались к 8-10 дню. Третья группа пациентов, с травмой живота и грудной клетки, составляет 10 пациентов (20%). В данной группе стабилизация гемодинамики наблюдается в течении 24 часов, функции внешнего дыхания восстанавливались к 4-6 дню, лабораторные показатели нормализовались к 11-12 дню. По полученным данным стандартными методами исследования пациентов с сочетанной травмой являются рентгенография, УЗИ органов брюшной полости, ОАК, ОАМ, коагулограмма, ИФА на ВИЧ, Гепатиты В и С, кровь на алкоголь, группа крови и резус фактор и ЭКГ, также при травмах головы производилось КТ головного мозга. Всем пациентам при поступлении производилась анальгетическая и инфузионная терапия, при признаках шока производилась противошоковая терапия и пациентов госпитализировали в ОАРИТ.

INTRODUCTION

One of the leading causes of death and disability worldwide is trauma [1]. Because modern medicine does not stand still and is improving every year, in recent times, we can observe a decrease in the mortality rates of patients with polytrauma [2]. Currently, there is a change in the etiology of injuries and an increase in cases of combined injuries due to an increase in cases of road accidents, man-made disasters, and industrial injuries [3]. According to statistics for 9 months of 2022, 10.2 thousand accidents occurred in Kazakhstan. The Committee on Legal Statistics of the Republic of Kazakhstan noted that in comparison with the same period last year, the growth of road accidents amounted to 8.9%. 15 thousand people were injured in accidents, and despite the successes of modern medicine, another 17 thousand died (11%) from various complications in the post-traumatic period.

Most disabilities worldwide are due to post-traumatic complications [4].

Upon admission of patients with combined trauma, a thorough objective assessment of the severity of the condition is necessary for adequate medical triage, selection of the necessary volume of medical research, and therapeutic measures, on which the outcome of the therapy depends in the future[5]. In the Republic of

Kazakhstan, the triage system of patient sorting has been used since 2017. The triage system is the distribution of patients into groups based on the priority of emergency medical care. According to the norms of the “Triage” system in the Republic of Kazakhstan, patients are divided into 3 groups.

1. Red group or patients who need emergency, urgent care;
2. The yellow group or patients who need urgent care are also called priority;
3. The green group or patients who need non-urgent or planned care.

Traumatic brain injury, massive hemorrhages, traumatic shock, hemorrhagic shock, asphyxia, and chest. abdominal injuries are the main cause of death in combined trauma.

One of the leading causes of mortality is massive bleeding. Adequate hemostatic therapy is a fundamental step in providing medical care to patients with combined trauma. However, it must be remembered that in traumatic shock there is an imbalance between coagulation and fibrinolysis caused by hemostatic and resuscitation therapy and causes such pathology as Trauma-induced coagulopathy [6]. Also, often the cause of a combined injury is catatrauma.

Due to the severity of the course, lethality, and high frequency of complications, it is necessary to pay great attention to infusion, and antishock therapy, as well as the post-resuscitation period, and the prevention of post-traumatic and post-resuscitation complications [7].

Efficiency assessment of medical care is based on the analysis of hospital mortality, disability, and the level of diagnostic measures, which allows for identifying the shortcomings of diagnosis, treatment, and the level of the organization providing medical care [8].

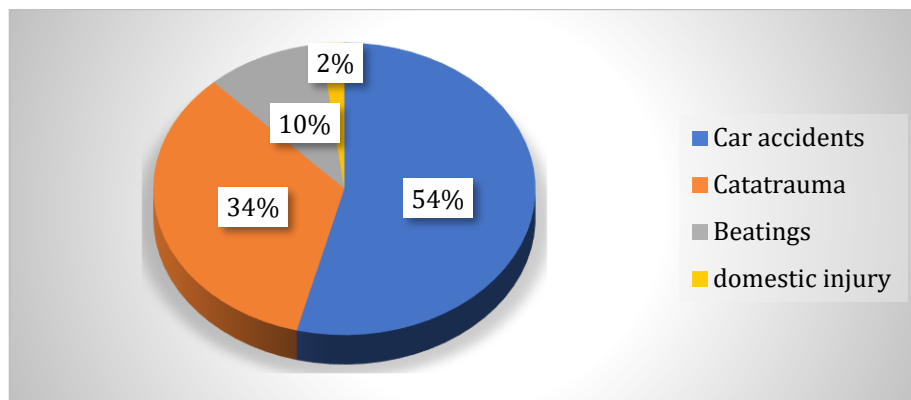
MATERIALS AND METHODS OF RESEARCH

We performed a retrospective clinical and statistical analysis of 50 cases of victims and those who were diagnosed with “combined trauma” in the 7th Municipal Clinical Hospital of Almaty. The inclusion criteria are the diagnosis of combined trauma, and injuries of several anatomical areas of the body. The exclusion criterion is the prescription of a case of more than 5 years.

For the analysis, the case histories took into account: gender, age, traumatic factor, the severity of the patient, diagnostic measures, diagnosis, treatment, number of bed days, outcome, and shock index.

We conducted a statistical analysis of the above categories.

According to the mechanism of injury, car accidents are most often observed (27 cases, 54%), followed by catatrauma (17 cases, 34%), there were also cases of beatings (5 cases, 10%) and one case of domestic injury (2%) (Graph 1).



Graph 1. The mechanism of injury.

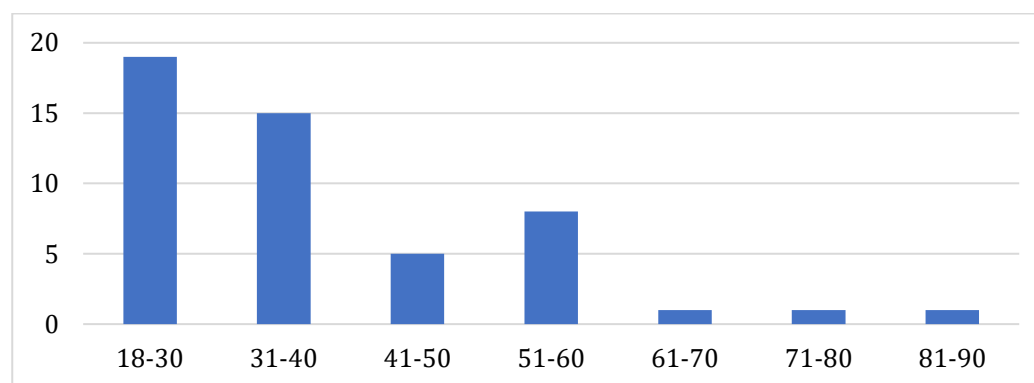
Of the 50 cases of combined trauma, the percentage of women was 40%, and men 60%, that is, the ratio of women and men is 2/3. (Table 1). There were 20 cases of combined trauma in women and 30 in men.

Table 1.

The ratio of men and women.

	Men	Women
Number of cases	30 (60%)	20 (40%)

The age of the victims was 18-88 years. (Graph 2). The number of victims aged 18-30 years was 19 cases (38%); 31-40 – 15 cases (30%); 41-50 – 5 cases (10%); 51-60 – 8 cases (16%); in the age categories 61-70, 71-80, 81-90, 1 case was observed (2% each).



Graph 2. Age of patients

Upon admission, the general condition of 35 patients was assessed as moderate, 13 – as severe, and 2 – as extremely severe.

According to the data obtained, standard methods of examination of patients with combined trauma are radiography, ultrasound of the abdominal cavity, general blood analysis, general urine analysis, coagulogram, EIA for HIV, Hepatitis B, and C, blood for

alcohol, blood type and Rh factor and ECG, brain CT was also performed for head injuries. Analgesic and infusion therapy was performed for all patients upon admission, antishock therapy was performed for signs of shock and patients were hospitalized in the intensive care unit.

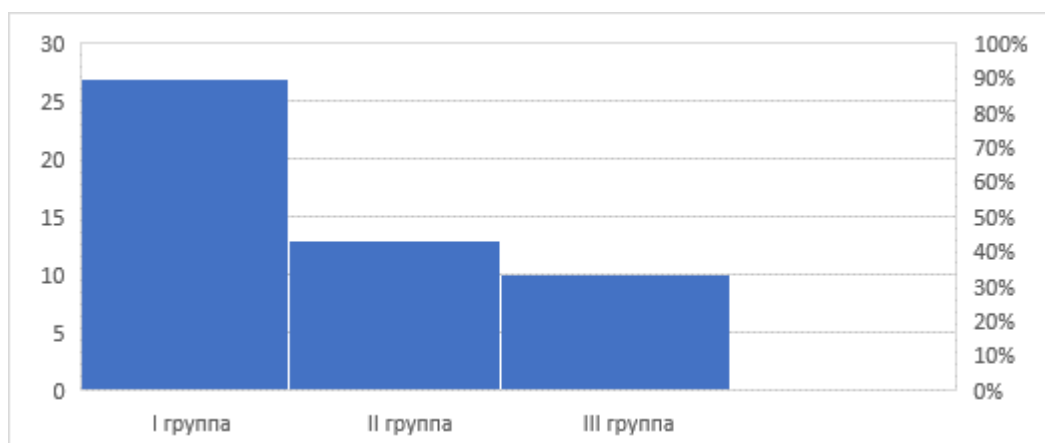
The average number of bed days was 14 days. In 98% of cases, the condition at discharge was assessed as an improvement, the mortality rate is 2%.

In the course of the study, we divided the case histories into 3 groups (Graph 3):

Patients with traumatic brain injury;

Patients with tubular bone injury;

Patients with abdominal and chest trauma.



Graph 3. Patient groups

The first group of patients with traumatic brain injury is 54% of the sample (27 cases) (Graph 3). All patients with traumatic brain injury underwent computed tomography of the brain. Traumatic/hemorrhagic shock was observed in 13 cases of this group. The period of antishock therapy averaged 18 hours. In these patients, hemodynamic stabilization occurred on days 4-6, respiratory functions were restored by days 8-10, and laboratory parameters normalized on days 12-14.

The second group of patients with tubular bone injury includes 13 patients (26%) (Graph 3). In this group, hemodynamic stabilization was observed within 24-36 hours, respiratory functions were restored by day 4-5, and laboratory parameters were normalized by day 8-10.

The third group of patients with abdominal and chest injuries is 10 patients (20%) (Graph 3). In this group, hemodynamic stabilization was observed within 24 hours, respiratory functions were restored by days 4-6, and laboratory parameters were normalized by days 11-12.

In patients of the first group, early surgical interventions were unfavorable or questionable, due to the assessment of the prognosis of the severity of shock. On the contrary, in patients of groups 2 and 3, when assessing the severity of the shock, anti-shock therapy was less than 12 hours, so early surgical interventions were favorable.

RESULTS

Of the 50 cases of combined trauma, the percentage of women was 40%, and men 60%. The average number of bed days was 14 days. In 98% of cases, the condition at discharge was assessed as an improvement, the mortality rate is 2%. The first group of

patients is 54% of the sample (27 cases. Traumatic/hemorrhagic shock was observed in 13 cases of this group. The period of anti-shock therapy averaged 24 hours. In these patients, hemodynamic stabilization occurred on days 4-6, respiratory functions were restored by days 8-10, and laboratory parameters normalized on days 12-14. The second group of patients with tubular bone injury includes 13 patients (26%). In this group, hemodynamic stabilization was observed within 24-36 hours, respiratory functions were restored by day 4-5, and laboratory parameters were normalized by day 8-10. The third group of patients with abdominal and chest injuries is 10 patients (20%). In this group, hemodynamic stabilization was observed within 24 hours, respiratory functions were restored by days 4-6, and laboratory parameters were normalized by days 11-12.

Standard methods of examination of patients with combined trauma are radiography, ultrasound of the abdominal cavity, general blood analysis, general urine analysis, coagulogram, EIA for HIV, Hepatitis B, and C, blood for alcohol, blood type, and Rh factor and ECG, brain CT was also performed for head injuries. Analgesic and infusion therapy was performed for all patients upon admission, anti-shock therapy was performed for signs of shock and patients were hospitalized in the intensive care unit.

CONCLUSION

According to the study, cases of combined trauma are increasing every year. Most of the victims are aged 18-40 years. In the Republic of Kazakhstan, 2,680 people were hospitalized in the trauma department in 2018, and the average number of bed days according to 7 GKB was 14 days. According to statistics in Germany, the number of hospitalizations for 2018 is 3064 people, and the average number of bed days is 6.5 days. This is owing to the fact that in Germany there is a rehabilitation center to which trauma patients are transferred after 6-7 days. Every year about 280 patients with polytrauma are transferred to a rehabilitation center [9]. Visual diagnostics is the gold standard for the diagnosis of combined injuries, it allows the most accurate diagnosis and helps to determine the further tactics of therapeutic manipulations [10]. According to the data of the 7th SCB, standard methods of visual diagnosis of patients with combined trauma are radiography, ultrasound of the abdominal cavity, as well as CT of the brain in head injuries. Comparatively, in Germany, when diagnosing a combined injury, in most cases, computed tomography of the whole body is used. In 2017, the issue of standardized CT scans of the whole body for the diagnosis of patients with polytrauma was raised in Germany. Computed tomography is the most effective method for visualization, a complex representation of the state of bones and soft tissues in the shortest time. According to research, CT scans of the whole body will increase short-term survival to 100% [10].

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