

## STRUCTURE OF THE CRITICALLY ILL PATIENTS IN INTENSIVE CARE UNIT IN CARIL: ANALYSIS FOR YEAR 2011

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**Abstract:** Critically ill patients are in very fragile pathophysiological condition in which only small changes can lead to vital organ dysfunction. Reserves of the organism among these patients are decreased and they need complex and dynamic intensive therapy and continuous monitoring of vital parameters. Intensive care units are specially designed and equipped with appropriate technical devices and special trained medical team for treatment of critically ill patients. Objective: The aim of this study was to evaluate the structure of the patients who were treated in the Intensive Care Unit (ICU) of the Clinic of Anesthesia, Reanimation and Intensive care during 2011, indication for admission in ICU (trauma, postoperative treatment or non-surgical illness), duration of treatment in ICU and indication and duration of mechanical ventilation. Patients and methods: This retrospective study includes patients who had been treated in ICU in CARIL during 2011. Method of statistical analysis were processed following parameters: age, gender, reason for the admission to the ICU (trauma, postoperative treatment or non-surgical disease), duration of the medical treatment in ICU (total and selected), duration of the mechanical ventilation depending on the admission criteria. Results: During year 2011 in ICU in CARIL 981 patients were treated, from which most of the patients had postoperative medical treatment 523 (53.31%), other were non-surgical patients 267 (27.22%) and trauma patients 191 (19.47%). Mechanical ventilation was indicated in 645 patients (65.7%). Conclusions: Mean age of the patients was 59 ±27 years, 66.6% were male, 53% were patients who were admitted in ICU due to postoperative treatment. Mean value of the duration of the medical treatment in ICU was 12 days. 65.7% of patients needed mechanical ventilation, a average number of days on mechanical ventilation was 10 days. The total mortality was 24%.

Key words: Intensive medical treatment, admission in ICU, demographic characteristics, mechanical ventilation.

### INTRODUCTION

Critically ill patient is in serious pathophysiological condition where only a small changes in functions of vital organs can lead to whole body disfunction. Reserves of the organism in critically ill patients are very small and they need continuous monitoring of vital paramethars and very complex intensive therapy(3).

These intensive therapy and continuous mo-

onitoring take place in separated departement units called Intensive care units (ICU) equipped with sophisticated tehcnical machines and specially trained medical team.(6). Multiprofesional medical team which is consisted of phisyotherapysts, nurses, nutritions, social workers and medical doctors (intensivist, surgions, pediatrics, radiologists, infectologists, e.t.c.), takes care of the patients that are admitted in ICU. Critically ill patients in grate procent have need for mechanical ventilation, renal replacement therapy, intensive suport of the heart by pacemakers or intraaortic balon pumps.

Intensive care treatment of the critically ill patients is most sophisticated medical treatment which depends from modern technology, human resource, pharmacological possibilities and good medical team approach.

**OBJECTIVE**

To show the structure of the patients which were admitted in ICU in CARIL in year 2011;

To show the percents of patients by the admission criteria (trauma, postoperative treatment or nonsurgical illness) in ICU in CARIL in year 2011

To show the mean value of duration of intensive care treatment, whole duration and selected by admission criteria in ICU;

To show the percents of patients which needed mechanical ventilation, whole duration and selected by admission criteria in ICU;

**PATIENTS AND METHODS**

In these retrospective study were included all patients that were treated in ICU in CARIC in 2011 year.

All patients were statistically analysed and retrospective evaluated for their structure: age, gender, reason for the admission in ICU, duration of the ICU treatment, and duration of the mechanical ventilation.

Following the reason for the admission in ICU patients were divided in three groups:

*Group 1:* patients admitted in ICU due to trauma

*Group 2:* patients admitted in ICU for postoperative treatment,

*Group 3:* patients admitted in ICU due to non-surgical disease

**Hypothesis:** In our ICU larger number of patient were male, the indication for ICU treatment was postoperative treatment and more than half of the patient needed mechanical ventilation.

**Motive:** Analysis of the percentage distribution of the patients due to indication for admission in ICU. Motivation for this analysis was enlargement of the non-surgical patients that need ICU treatment.

**RESULTS**

981 patients were treated in CARIL ICU in year 2011, from which 654 were male (66.6%) and 327 female (33.3%).

Demographic characteristics of the patients

*Table 1 Percentage distribution of the patient by gender*

male	66.6%
female	33.3%

*Table 2 Age of the patients (mean value and standard deviation)*

	Mean value, standard deviation
age	59 ± 27

*Table 3 Duration of the ICU treatment (mean value and standard deviation)*

	X±SD
	Mean value (days)
Days in ICU	12±30

*Table 4 Admission criteria in ICU*

	Number of patients	Percent %
Trauma	191	19.47%
Postoperative treatment	523	53.31%
Non-surgical illness	267	27.22%

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Table 5 Duration of the ICU treatment according to the admission criteria

	N Number of patients	X±SD Duration of medical treatment in ICU (in days)
Trauma	191	17±35
Postoperative treatment	523	5±20
Non-surgical illness	267	22±32

Table 6 Duration of the mechanical ventilation (mean value and standard deviation)

	X±SD Mean value (in days)
Duration on mechanical	10± 31

Table 7 Distribution of the patients by the indication for mechanical ventilation

	Number of patients	Percent %
Trauma	154	23.87%
Postoperative treatment	291	45.12%
Non-surgical illness	200	31.01%

**Distribution of the patients by indication for mechanical ventilation**



Table 8 Duration of the mechanical ventilation according to the admission criteria

	N Number of patients	X±SD Duration on mechanical ventilation in days
trauma	154	15±27
Postoperative treatment	291	7±12
Non-surgical illness	200	19±25

Program Statistics 7 was used for Statistical analysis of the findings in these study ( mean value, standard deviation and percentage ).

**DISCUSSION**

The length of stay in ICU is considered to be the one of the main predictive factors for the outcome of the patients treatment. (1). It has been proven that

there is correlation between the duration of the ICU treatment and the patient outcome. If duration of the ICU treatment is longer, there are more possibilities for worse outcome ( 2-5). Many times there is a need for patients, despite of the fact that they are starting to recover from the critical illness, to have longer stay in ICU to provide appropriate support in therapy. Incidence of these patients is approximately 5 to 10 % in North America (6). If there is no special post intensive care unit to take care for "chronically ill critical patients" they continue their treatment in ICU, like in our country. Well-organized medical Institutions have different types of intensive and post intensive care units depending on the patients diagnosis, critical illness and the patients need for mechanical ventilation.(6). Patient that need mechanical ventilator support (neurological patients, patients with the spinal cord injury) , can also be transferred in special respiratory centers where they will receive adequate treatment and care (7-9).

In one multicenter retrospective study in Great Britain demographic characteristics and mortality were analyzed in patients admitted in ICU in a period of 12 years and it had concluded that during the years the number of the patients with age over 80 years, but the mortality rate stayed the same.(10).

In studies conducted in Pennsylvania on 4920 trauma patients, only at 7, 205 (4%) of them remained for ICU treatment longer than 30 days.(11).

In our study we found that 22% of the patients were admitted in our ICU due to non-surgical illness. These patients have decompensating of chronic disease. Duration of the stay in ICU for the non-surgical patients was significantly longer (22 ± 32 days), in comparison with patients that were admitted in ICU for postoperative treatment (5 ± 20 days). These patients needed significantly prolonged mechanical ventilation (19 ± 25 days).

**CONCLUSIONS**

In Intensive Care Unit in Clinic for Anesthesiology, Reanimation and Intensive care during year 2011, 981 patients were treated from which 66% were male.

Mean age of the patients was 59 ± 27 years. Most of the patients were admitted into the ICU for postoperative treatment( 53%), for non-surgical disease 27% and due to trauma 19%.

Mean value for duration of ICU treatment was

30 days, and patients that were admitted in ICU due to non-surgical illness stayed longer (22±32 days).

Mean value of the duration on mechanical ventilation was 10 ± 31 days, and patients that were admitted in ICU due to non-surgical illness stayed longer on mechanical ventilation (19±25 days).

Whole mortality was 24%.

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seven-year retrospective study; Adrian W Ong<sup>1</sup>, Laurel A Omert<sup>2</sup>, Diane Vido<sup>3</sup>, Brian M Goodman<sup>1</sup>, Jack Proetch<sup>1</sup>, Aurelio Rodriguez<sup>1</sup> and Elan Jeremitsky<sup>1</sup>. *Critical Care* 2009, 13:R154 (doi:10.1186/cc8054)

#### РЕЗИМЕ:

#### СТРУКТУРА НА КРИТИЧНО БОЛНИТЕ ПАЦИЕНТИ ВО ЕДИНИЦАТА ЗА ИНТЕНЗИВНО ЛЕКУВАНЈЕ НА КАРИЛ: АНАЛИЗА ЗА 2011 ГОДИНА

**Вовед:** Заедничка карактеристика за сите критично болни пациентите што тие се наоѓаат во таква патофизиолошка состојба во која и мали промени во функционирањето на виталните органи доведуваат до пореметување на целиот организам. Резервите на организмот кај овие пациенти се намалени и тие може да се одржуваат во живот само со многу комплексна и динамична интензивна терапија и континуирано мониторирање на сите витални параметри. Оваа интензивна терапија и континуиран мониторинг се одвиваат во организационо посебни Единици за Интензивно лекување кои се опремени со соодветна техничка апаратура и стручен медицински персонал. **Цел на трудот:** Да се прикаже структурата на пациентите кои биле лекувани во Единицата на Интензивно лекување на КАРИЛ во текот на 2011 година. Да се прикаже просечното времетраење на интензивното лекување, како и проценуална застапеност на пациентите според причината за прием во Единицата за Интензивно лекување (траума, постоперативно лекување или нехирурска болест), како и процентот на пациенти кои побарувале механичка вентилација. **Пациенти и методи:** Оваа ретроспективна студија ги вклучува сите пациенти кои биле лекувани во Единицата за Интензивно лекување на КАРИЛ во 2011 година. Со методот на статистичка анализа беа обработени следниве параметри: возраст, пол, причина за прием во ЕИЛ (траума, постоперативно лекување или нехирурска болест), времетраење на лекување во ЕИЛ (вкупно и селектирано, според причината, времетраење на лекување во ИЛ), потреба од механичка вентилација и нејзино времетраење во зависност од причината за прием во ЕИЛ на КАРИЛ во 2011 година. **Резултати:** Во Единицата за Интензивно лекување на КАРИЛ во 2011 година се лекувале вкупно 981 пациент од кои најголемиот број биле пациенти на постоперативно лекување 523 (53.31%),

болни со нехируршка болест 267 (27.22%) и траума пациенти 191 (19.47%). Механичка вентилација побарувале 645 пациенти (65,7%), а средна вредност на механичка вентилација во денови била 10 дена. Средна вредност на времетраење на лекувањето во ЕИЛ во денови било 12 дена. Средна возраст на пациентите била 59 ± 27 години, а 654 (66,6%) биле од маски пол и 327 (33,3%) од женски пол. Со егзитус леталис заврсиле 237 (24%) пациенти. **Заклучок:** Средна возраст на пациентите била 59 ± 27 години, 66,6% биле од маски пол, а 53% биле пациенти кои биле примени во ЕИЛ поради постоперативно лекување. Средна вредност на времетраење на лекување во ЕИЛ изнесува 12 дена. 65,7% од пациентите побарувале механичка вентилација, а средна вредност на траењето на механичката вентилација била 10 дена. Вкупниот морталитетот бил 24%.

**Клучни зборови:** Интензивно лекување, причина за прием во ИЛ, демографски карактеристики, механичка вентилација.