EWA RUDNICKA-DROŻAK[1], BEATA RYBOJAD[2], IWONA JAWORSKA[3], RENATA KORECKA[1], ANNA AFTYKA[1]

Analiza przyczyn hospitalizacji na Oddziale Intensywnej Terapii Wojewódzkiego Szpitala Specjalistycznego w Lublinie

Streszczenie

Wstęp. Oddziałami intensywnej terapii są oddziały prowadzone przez anestezjologów i gromadzące chorych znajdujących się w stanie zagrożenia życia z różnych przyczyn.

Celem badań była analiza przyczyn hospitalizacji pacjentów na Oddziale Intensywnej Terapii.

Materiał i metoda. W pracy zastosowano metodę analizy dokumentacji medycznej, na potrzeby niniejszej pracy stworzono narzędzie badawcze kwestionariusz ankiety.
Badania zostały przeprowadzone na terenie Oddziału Intensywnej Terapii i Anestezjologii Wojewódzkiego Szpitala Specjalistycznego im. Stefana Kardynała Wyszyńskiego w Lublinie, w okresie od października 2006 do października 2007 roku. Ogółem analizie poddano 126 pacjentów, z badań wykluczono 26 z powodu niepełnej dokumentacji medycznej.

Wyniki i wnioski. Najczęściej czas pobytu pacjentów na Oddziale Intensywnej Terapii wynosił od 1-7dni.Główne przyczyny hospitalizacji na tym oddziale to: niewydolność oddechowa, stan po nagłym zatrzymaniu krążenia oraz urazy wielonarządowe. Stwierdzono istotne różnice pomiędzy wiekiem pacjenta a przyczyną hospitalizacji : ofiary wypadków komunikacyjnych to osoby w wieku około 32 lata. Starsi pacjenci ze średnią wieku 63 lata to osoby przeniesione z innego oddziału. Kobiety najczęściej były hospitalizowane na OIT z powodu przeniesienia z innego oddziału, mężczyźni zaś równie często na skutek przeniesienia z innego oddziału jak i z powodu wypadku komunikacyjnego.

Słowa kluczowe: oddział intensywnej terapii, urazy, nagłe zatrzymanie krążenia

Analysis of the causes of hospitalization in the Intensive Care Unit of the Regional Specialist Hospital in Lublin

Abstract

Introduction. Intensive Care units are departments managed by anesthesiologists which admit patients in life-threatening situations due to various reasons.

The aim of this study was to analyze the causes of hospitalization of patients in Intensive Care Units.

Material and methods. The method used in the research was the analysis of medical records, and the research tool was a questionnaire survey developed for the purpose of this study.

The research was carried out at the Department of Anesthesiology and Intensive Care Unit of the Cardinal Stefan Wyszynski Regional Hospital in Lublin from October 2006 to October 2007. The study included 126 patients out of whom 26 subjects were excluded because of incomplete medical records.

Conclusion. The hospitalization at the intensive care unit ranged from 1-7 days. The main causes of hospitalization in this department are: respiratory failure, the state after a sudden cardiac arrest and multi-organ injuries. Significant differences were found between patients' age and the cause of hospitalization: the casualties of traffic accidents were people circa 32 years old. Older patients with an average age of 63 were mostly people transferred from other departments. The women were most often hospitalized at ICU after being transferred from other departments and the men also as a result of a transfer from other departments and because of traffic accidents.

Keywords: intensive care unit, injuries, sudden cardiac arrest

[1] Independent Laboratory of Medicine of Disasters, Medical University of Lublin
[2] Children's University Hospital, Lublin,
[3] Stefan Cardinal Wyszynski Regional Hospital in Lublin

INTRODUCTION

The history of intensive care units goes back to the 1950s of 20th century. During the outbreak of Heine-Medina disease epidemics, the team of anesthesiologists in Denmark organized a unit where prolonged artificial respiration was used [1].

The first intensive care units in Poland were created in academic centers - in 1960 in Lodz, in 1961 in Poznan and in Katowice in 1963. The experience gained then is still up-to-date – also at modern intensive care units.

After initial doubts as to the name (intensive care units, intensive supervision units, "R" units, shock troops, etc.), the name of intensive care unit was adopted in accordance with the instructions of the Minister of Health and Welfare (Ministry of Health) in 1983 [2].

The basic intensive care units are managed by anesthesiologists and admit patients in life-threatening conditions due to various reasons. In addition, for many years, departments targeted for treatment of selected medical conditions have been organized.

Currently, the legal basis for the establishment and functioning of departments of anaesthesiology and intensive care is the Regulation of 1998 of the Ministry of Health and Regulation of the Ministry of Health of June 22, 2005. The number of beds in intensive care units should constitute 2% -5% of the number of hospital beds [3].

OBJECTIVE

The objective of this study was to analyze the causes of hospitalization of patients in intensive care units.

MATERIALS AND METHODS

The study used a method of medical records analysis, and a questionnaire was developed as a research tool.

The research was conducted at the Department of Anesthesiology and Intensive Care Unit of the Cardinal Stefan Wyszynski Regional Hospital in Lublin from October 2006 to October 2007. There were 126 patients covered by the study and 26 patients were excluded because of incomplete medical records.

RESULTS

The analyzed group comprised 100 persons. Among the respondents, 33% were women and twofold more men - 67%. The average age was 56.6 years (18 - 98 years), 66.7 for women (20 - 98 years) and for men 51.7 years (18 - 80 years).

The residents of the city accounted for 62% of patients, while 38% were the inhabitants of rural areas. Almost half of the respondents - 47% stayed in the unit for less than 7 days, 23% from 8 to 14 days, 14% - from 15 to 21, and for more than 21 days - 16%.

The most common causes of hospitalization were: respiratory failure - 39% of cases, a sudden cardiac arrest - 20%, multi-organ injury - 17%, cardiac insufficiency - 2%. The so-called 'other' reasons accounted for 22% of the hospitalized people, among which were: status epilepticus, hemorrhagic shock, methanol poisoning, septic shock, acute renal failure, suicide attempt, cracked abdominal aortic aneurysm, a state of convulsion, cranio-cerebral trauma.

The analysis showed significant statistical differences between men and women as regards the cause of hospitalization ($p = 0.05$, $\chi 2 = 7.91$). Among women, the most frequent causes of hospitalization were cardiac failure and respiratory failure (54.55%), sudden cardiac arrest (21.21%) and multi-organ trauma (3.03%). Among men, the most common cause was respiratory failure (41%), followed by multi-organ trauma (23.88%) and other causes (22%) (Table 1).

The analysis showed a highly statistically significant relationship between the causes of hospitalization and the patient's age. Due to respiratory and circulatory failure, there were hospitalized the oldest people (average age – 66.51 years); due to a sudden cardiac arrest -people over 50 years old, and due to multi-organ injuries – the youngest patients (mean age 32.35%) ($p < 000.001$, $\chi 2 = 16.82$) (Table 2).

Up to 60% of the patients stayed in the intensive care unit after being transferred from another unit, while 17% - because of a traffic accident, 22% due to events at home and 1% due to an accident at work. The studies confirmed statistically significant differences between men and women as regards the cause of hospitalization ($p = 0.03$, $\chi 2 = 6.82$). Women were generally admitted because of the transfer from another unit (69.7%), rather than because of the event at home (27.27%) or a traffic accident (3.03%). By contrast, men were significantly more frequent than women victims of traffic accidents (23.88%) (Table 3).

The analysis confirms a highly statistically significant relationship between the kind of event and age ($p < 0.000001$, $\chi 2 = 22.10$). Patients who were involved in traffic accidents were young - the average age was 32.24 years, while the consequences of work related events concerned persons aged on average 57.39 years.

The statistical analysis showed no significant relation between the epicrisis and the cause of hospitalization ($p = 0.20$, $\chi 2 = 4.89$). Patients who were victims of traffic accidents (76.47%) were mostly/usually transferred to other units, while the other patients (23.53%) had died. The patients admitted from other departments were transferred again to other departments (50%), 48.33% of the patients did not survive, and 1.67% were discharged home (Table 4).

DISCUSSION

The largest number of sudden cardiac arrests and deaths occurs in patients with cardiovascular disease who were not previously diagnosed. Frequently, the first symptom of a heart disease is a fatal myocardial infarction. A smaller number of deaths due to cardiovascular causes concerns younger people with no heart diseases reported earlier. Epidemiological studies can help identify people at higher risk of heart diseases in terms of the critical complications that usually threaten life. These factors may include, among others: the aging process, genetic causes, smoking, male gender, stress, certain diseases, such as diabetes, hyperlipidaemia, hypertension [4].

TABLE 1. Cause of hospitalisation with regard to sex.

Sex	Circulatory failure		Sudden circulatory arrest		Multiorgan injury		Other		Total	
	N	(%)	N	(%)	N	(%)	N	(%)	N	(%)
Women	18	(54.5)	7	(21.2)	1	(3.3)	7	(21.0)	33	(100)
Men	23	(34.3)	13	(19.4)	16	(23.8)	15	(22.5)	67	(100)
Total	41	(41.0)	20	(20.0)	17	(17.0)	22	(22.0)	100	(100)
p=0.05 χ^2=7.91										

TABLE 2. Causes of hospitalisation with regard to age.

Cause of hospitalisation	Age			
	Mean	Min.	Max.	Standard deviation
Respiratory/circulatory insufficiency	66.51	18.00	98.00	17.00
Sudden circulatory arrest	57.15	19.00	80.00	16.91
Multiorgan injury	32.35	20.00	58.00	12.97
p<0.000001; χ^2= 16.82				

TABLE 3. Causes of hospitalisation with regard to sex.

Sex	Traffic accident		Accident at home/work		Admission from other departments		Total	
	N	(%)	N	(%)	N	(%)	N	(%)
Women	1	(3.03)	9	(27.27)	23	(69.70)	33	(100)
Men	16	(23.88)	14	(20.90)	37	(55.22)	67	(100)
Total	17	(17.00)	23	(23.00)	60	(60.00)	100	(100)
p= 0.03; χ^2=6.82								

TABLE 4. Epicrisis of patients with regard to the type of event.

Cause of hospitalisation	Discharge		Transfer to Rother departments		Death		Total	
	N	(%)	N	(%)	N	(%)	N	(%)
Traffic accident	0	0.00	13	76.47	4	23.53	17	100
Accident at home/work	1	4.35	11	47.83	11	47.83	23	100
Admission from other departments	1	1.67	30	50.00	29	48.33	60	100
Total	2	2.00	54	54.00	44	44.00	100	100
p=0.30 χ^2=4.89								

A significant number of cardiac arrests is due to both traffic accident injuries and injuries in the workplace or at home. Home injuries constitute a high percentage of serious complications, including circulatory arrest, this also concerns children.

Other causes of sudden cardiac arrest due to circulatory system disorders are: ischemic heart disease, arrhythmias, acute and chronic cardiac failure, advanced valvular defects, hypovolemic and cardiogenic shock, pulmonary oedema, major vascular injuries and post-traumatic aneurysm (dissecting aneurysm of the aorta).

Most common causes of a sudden cardiac arrest related to the respiratory system are: airway obstruction, chest trauma, pneumothorax, parenchymal and obstructive lung disease and the state of bronchial asthma. The most common causes of circulatory arrest on the part of the central nervous system are: stroke with intracranial hemorrhage, poisoning (opioids, sedatives, poisons), infections (cerebrospinal meningitis with severe metabolic acidosis penetrations and hyperventilation and brain tumors).

The main cause of hospitalization in the intensive care unit were: respiratory failure (39%), a sudden cardiac arrest (20%) and multi-organ injuries (17%); 22% of the patients were admitted to the unit due to other reasons (status epilepticus, hemorrhagic shock, acute renal failure).

Injuries are called the largest epidemics of the twentieth century. American sources (...) indicate that various injuries affect 60 million Americans annually, 30 million of them require medical assistance – of which 12% are hospital admissions; 300 thousand [people] remain permanently unfit for work and 150 thousand die.

In Poland, the mortality rate accounts for total of 30 thousand a year – this is by half more than in Europe and North America – i.e., 80 per day. According to the literature, the most common cause of injury (approximately 50%) are so-called ordinary horizontal falls. Traffic accidents take the second place. They constitute up to 70%-75% of all most severe cases, including multiple and multi-organ injuries and therefore they are life-threatening injuries [5-7].

When analyzing post-traumatic mortality, 3 periods can be distinguished when death occurs. Some patients die immediately - within minutes after the accident, usually before the arrival of the emergency medical team, and the cause of death are severe cranio-cerebral injuries and massive haemorrhage as a result of heart and large blood vessels injury. In Poland more than half of such fatalities occur. A further 10% -15% of people die during the so-called 'golden hour'. Here the cause is often hemorrhage and less often – cerebral injuries. The rest of the victims die days and weeks after the accident because of complications, i.e. renal failure, respiratory failure, infection (sepsis) and multi-organ failure [8, 9, 10].

The carried out analysis shows that it is mainly young people who were victims of traffic accidents, the average age was 32.4 years, while those transferred from other units to the intensive care unit were characterized by older mean age - 63.23 years old.

Significant differences were also found in the cause of hospitalization among men and women. Women usually were transferred to the intensive care unit from other hospital units; there was a similar case with men, but more often than women they were admitted after traffic accidents. Among the respondents, only 2% of the patients were discharged home, but in up to 44% of the patients a fatal outcome was reported.

CONCLUSION

1. Most frequently the patients' hospitalization in the intensive care unit ranged from 1-7days.
2. The main causes of hospitalization in this unit are: respiratory failure, the state after a sudden cardiac arrest and multi-organ injuries.
3. Significant differences were found between patient's age and cause of hospitalization: the victims of traffic accidents were people aged circa 32 years of age. Older patients with the/- average age of 63 years old are the people who were transferred from other departments.
4. The women were most often hospitalized in ICU after being transferred from other hospital units, whereas the men were transferred from other units and also due to traffic accidents

REFERENCES:

1. Wołowicka L, Dyk D. (editors) Anestezjologia i intensywna opieka. Klinika i pielęgniarstwo. Warszawa: PZWL; 2007.
2. Kamiński B, Dziak A. Postępowanie w stanach zagrożenia życia. Warszawa: PZWL; 2007.
3. Widomska-Czekajska T. (editors) Internistyczna terapia i opieka pielęgniarska. Warszawa: PZWL; 1991.
4. Zawadzki A. Medycyna ratunkowa i katastrof. Warszawa: PZWL; 2006.
5. Brongel L, Duda K. (editors) Mnogie i wielonarządowe obrażenia ciała. Warszawa: PZWL; 2001.
6. Kózka M. Stany zagrożenia życia. Kraków: Wydawnictwo UJ; 2001.
7. Kokot F. Ostre stany zagrożenia życia w chorobach wewnętrznych. Warszawa: PZWL; 2003.
8. Brongel L. (editor) Złota godzina czas życia, czas śmierci. Kraków: Wydawnictwo Medyczne; 2007.
9. Rybicki J. Intensywna terapia dorosłych. Gdańsk: NOVUS ORBIS; 1999.
10. Jakubaszko J, Ryś A. (editors) Ratownictwo medyczne w Polsce. Kraków: Zdrowie i Zarządzanie; 2002.

Informacje o Autorach

Dr hab. n. med. Ewa Rudnicka-Drożak – p.o.kierownik, Samodzielna Pracownia Medycyny Katastrof, Uniwersytet Medyczny w Lublinie; lek. med. Beata Rybojad – starszy asystent, Kliniczny Oddział Anestezjologii i Intensywnej Terapii, Dziecięcy Szpital Kliniczny w Lublinie, mgr Iwona Jaworska, mgr Anna Aftyka – doktorant, lek. med. Reanata Korecka – wykładowca, Samodzielna Pracownia Medycyny Katastrof, Uniwersytet Medyczny w Lublinie

Adres do korespondencji

Samodzielna Pracownia Medycyny Katastrof
Uniwersytet Medyczny w Lublinie
ul. Chodźki 6, 20-093 Lublin