Incidence of Morbidity and Mortality in Premature Infants at the Department of Neonatal Intensive Care of Pediatric Clinic, Clinical Center of Sarajevo University

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Introduction: Premature baby (praematurus, neonatus praetemporarius) indicates infant that is born before 37 full weeks of gestation, calculated from the first day of the last mother’s menstruation. Premature baby is characterized by immaturity of its organs and tissues, which can lead to an immediate or later threat. Premature children cannot keep the body temperature and very quickly gets hypothermia. This is due to the low creation of heat, but also because of the great loss of heat through the thin skin, which lacks fat. Nervous system in premature children is immature, and therefore has little control on breathing and often ‘forget to breathe’. Also, they have underdeveloped reflexes, among other the feeding reflex. Goal: The main goal of the research was to show the incidence of hospitalization in premature infants during examined period, the most common complications and to show the degree of maturity. Also, during the research are presented and the frequency of premature born infant mortality. Material and methods: The study included a period of 6 months and was conducted at the Pediatric Clinic, Clinical Center University of Sarajevo. The clinical study included 81 premature newborns, which in the period from June 1, 2012 to December 31, 2012 hospitalized at the Department of Neonatal Intensive Care Unit. On the basis of data from the history of the disease, were analyzed all newborns, gestation age, diagnosis for which they were hospitalized and flow with existing complications during treatment and recovery. Results: In the second half of the 2012 at the Pediatric Clinic CCUS was hospitalized 81 premature born children. Gestational age ranged from 27 to 37 weeks and the body weight from 810 to 2500g. These children generally had respiratory problems during hospitalization and in nearly 1/3 of premature infants developed respiratory distress syndrome. In the study period there were 15 deaths in children whose average gestational age was 27 weeks and the body weight of 1050 grams. Conclusion: The incidence of premature infants and their mortality and morbidity has an important role in the provision of information needed to improve the health of pregnant women, mothers and newborns. It is also an important indicator of concern for the health of the mother and the quality of gynecological and pediatric care. Adequate approach to antenatal care and a high degree of frequency of neonatal care the premature delivery can be reduced and premature mortality minimized. Key words: premature infant, mortality, morbidity.

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1. INTRODUCTION
Premature infant (praematurus, neonatus praetemporarius) indicates infant that is born before 37 full weeks of gestation, calculated from the first day of the mother’s last menstrual period (1). Previously as a premature infant was considered all children birth with weight of less than 2500 g (2). Today, all infants with birth weight less than 2,500 grams are divided into two groups: the first group are those who have intrauterine normal developed, but the delivery was before the end of 37 weeks of pregnancy are premature in terms of contemporary definitions and they makes 2/3 of all newborns with less than 2500 grams at birth, the second group includes those infants who have slowed intrauterine growth and their birth weight does not correspond to the expected weight for gestational age and achieved less than 10 percentile (3). These are intrauterine dystrophic or hypotrophic infants that can be born before or after the 37th week of pregnancy, and they make up about one third of newborns with weight than 2500 grams at birth (4). Premature children are characterized by immaturity of their organs and tissues, which can lead to an immediate or postponed threat. Premature children cannot keep the body temperature very quickly get hypothermic. This is due to the low creation of heat, but also because of the great loss of heat through the thin skin, which lacks fat. Nervous system in premature children is immature and therefore has little control breathing, and of-
ten „forget to breathe (5)“. Also, have underdeveloped reflexes, including the feeding reflex. Therefore they must be fed through the tube. The amount of milk which they can take because of the small volume of the stomach is often too small to ensure their proper growth and development, and are therefore often used „parenteral nutrition“ that is giving the consumer own personal nutrients through a vein (6). Immature immune system makes them very vulnerable to infection. Bacteria that normally live on the skin of adults in premature babies are in incubators, life-threatening infections (7). Therefore premature babies are in incubators, to maintain a certain temperature, protected from outside influences. Survival of these children, thanks to the application of new technologies, it is very improved, although immature children remain one high-risk group (8).

2. SUBJECTS AND METHODS

The research covered a period of 6 months and was conducted at the Pediatric clinic, Clinical Center University of Sarajevo. The clinical study included 81 premature newborns, which was born in the period from July 1, 2012 to December 31, 2012 and was hospitalized in neonatal intensive care. On the basis of data from the history of the disease, we analyzed all infants, gestational age, diagnosis for which they were hospitalized and flow with existing complications during treatment and recovery. All data were statistically analyzed for qualitative variables were used contingency tables and applied the chi-square test and to compare quantitative data ANOVA test was used. Statistical analysis was performed using the statistical program SPSS ver. 20.0 and the level of significance was p <0.05.

3. RESEARCH GOAL

The main goal of this study was to show the frequency of hospitalization among premature infants in the examined period, the most common complications faced and to show the degree of maturity. Also, during the research are presented and the frequency of premature infants mortality.

4. RESULTS

The study included 44 (58.02%) preterm male and 37 (31.56%) female newborns. Chi-square test showed no statistically significant difference in gender distribution among premature born, χ²=0.605, DF=1, p=0.437. The analysis of gestational age of preterm infants at the time of birth reveals information that the average gestational age of the test group was 31.17 ± 2.42 (810-2500g). ANOVA test showed a statistically significant difference in body weight F=56.73, p<0.05.

The number of premature born due to a number of complications died 15 and survived 66. Table 3 presents data on the incidence of mortality in preterm infants included in this study. Of the total number of premature infants in the examined period, the most common complications faced and to show the degree of maturity. Also, during the research are presented and the frequency of premature infants mortality.

![Figure 1. The distribution of the weight of preterm infants](image1)

![Figure 2. The incidence of the most common diseases in the studied sample](image2)
By the analysis of the average weight of premature infants has been determined that the average body weight was 1793.95±546.54g (810-2500g). The average weight of premature male infants is 1732.72±595.37g (850-2500g), and female 1866±479.98 (810-2450g). ANOVA test showed no statistically significant difference in mean body weight in relation to gender, F=1.212, p=0.274.

Of the total number of subjects included in this study 63% had no disease, 29% developed RDS, asphyxia in 4% and in 1% had hypoglycemia, anomalies, TTN/RDS type II and IVH/PVH.

Table 3 presents data on the incidence of mortality in preterm infants included in this study. Of the total number of premature born due to a number of complications died 15 and survived 66. Premature infants who died were at average gestation age of 27.66 ± 0.72 (27-29) weeks and weight of 1057.3±203.45g (810-1450g), while those who survived had average age of 31.96±2.42 (810-1450) weeks, and weight 1961.36 ± 452.83 g (950-2500g). ANOVA test showed a statistically significant difference in the age of deceased and surviving preterm F=45.92, p<0.05 and there is also a statistically significant difference in body weight F=56.73, p<0.05.

5. DISCUSSION

In the developed world, due to the constant improvement of perinatal health care, progress or improved technology and better understanding of the pathophysiological processes in the increasing number of preterm survivors at very young gestational age that during the growth and development show various neurological and cognitive disorders. The need for long-term rehabilitation and for special needs during the development of a new type of problems and stress, not only for the patients but also for their families and society as a whole. Long-term monitoring of morbidity of surviving preterm infants demonstrated a high incidence of cerebral paralysis and serious neurological complications (9,10,11). According to the research, published in 2009 from 30-60% of preterm infants weighing less than 1500 grams showing cognitive disorders and learning disabilities. Almost 40% of these children show a slight motor deficit, while 10.15% has cerebral palsy (12, 13,14,15). Today it is considered to be the prevention of preterm birth as the most common cause of perinatal hypoxic-ischemic events in premature infants also prevented any damage. As even in the developed world, despite the better work of doctor gynecologist sub-specialist in fetus and maternal medicine and better monitoring of high-risk pregnancies, there was no significant decrease in premature births, it remains only to find other ways to prevent possible damage to the brain due to prematurity. Apart from the need to find ways for neuroprotection of immature brain sensitive structures, it is necessary to improve the technological, pharmacological and other treatments that will continue maintaining physiologcal processes, growth and development that is appropriate for intraterine conditions (16). In the second half of the 2012 at the Pediatric Clinic CCUS were hospitalized 81 preterm born children. Gestational age ranged from 27 to 37 weeks and birth weight from 810 to 2500g. These children generally had respiratory problems during hospitalization and in nearly 1/3 of premature infants develop respiratory distress syndrome. In the study period there were 15 deaths of newborns whose average gestational age was 27 weeks and the body weight of 1050 grams. In the perinatal period occur more deaths than during the next 30 years of human life and all this depends on the organization, accessibility, quality and level of development of care for mother and newborn. Different is the perinatal mortality rate, even within a country, because it is dependent on the knowledge, hygienic and economic conditions of life of the population, marital status, level of education, urban or rural residence and care for pregnant women. Therefore, the causes of death vary significantly, but the most common are perinatal asphyxia, prematurity and congenital anomalies (17).

6. CONCLUSION

The incidence of premature infants and their mortality and morbidity has an important role in providing the information needed to improve the health of pregnant women, mothers and newborns. It is also an important indicator of concern for the health of the mother and the quality of gynecological and pediatric care. With the proper approach to antenatal care and a high level of neonatal care the number of premature birth can be reduced, and premature mortality minimized.

REFERENCES