

EPIDEMIOLOGICAL AND RISK FACTORS FOR CHILDREN BORN FROM HYPERTENSIVE MOTHERS

RADU CHICEA¹, MARIA LIVIA OGNEAN², ANCA LUCIA CHICEA³, PAULA NIȚĂ⁴

^{1,2,3}“Lucian Blaga” University of Sibiu, ⁴Clinical County Emergency Hospital, Sibiu

Keywords: hypertensive mothers, epidemiology, risk factors

Abstract: Hypertensive disorder in pregnancy is one of the most important issues in obstetrics with great consequences on both the mother and the fetus.(1) The National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy classifies pregnancy-related hypertension as follows: chronic hypertension, preeclampsia-eclampsia, preeclampsia superimposed on chronic hypertension, gestational hypertension.(1,2) In Romania, neonatal mortality accounts for over 50% of infant mortality and is striking by the increased mortality of newborns with low birth weight.(3) We organized a retrospective observational case-control study that included the clinical cases in the Maternity Hospital of Sibiu Clinical County Emergency Hospital in the past 2 years. The aim of the study is to evaluate the epidemiology and risk factors of newborns from hypertensive mothers in the Maternity Hospital of Sibiu Clinical County Emergency Hospital.

INTRODUCTION

Hypertensive disorder in pregnancy is one of the most important issues in obstetrics with great consequences on both the mother and the fetus.(1,2)

The National High Blood Pressure Education Program Working Group on High Blood Pressure in Pregnancy classifies pregnancy-related hypertension as follows: Chronic hypertension, Preeclampsia-eclampsia, Preeclampsia superimposed on chronic hypertension, Gestational hypertension.(3)

The main cause of perinatal mortality and morbidity is preterm birth. One of the main determined factors of premature birth is preeclampsia.(1)

In Romania, neonatal mortality accounts for over 50% of infant mortality and is encumbered by the increased mortality of newborns with low birth weight.(3,4)

In our country, the mortality of newborns weighing between 1500 g and 2000 g is 30 times higher than those with normal birth weight, and the mortality of newborns weighing under 1500 g is 100 times higher compared to the newborns with normal birth weight.(4)

A population-based study conducted by Roberts CL et al between 2000-2002, that included 250,173 pregnant women with their 255,931 newborns, of whom 24,517 with hypertensive disorder, showed that newborns from mothers with hypertensive pathology were more likely to preterm birth or small for gestational age.(5)

Preeclampsia is responsible for 12% of newborns with low birth weight and 20% of newborns born prematurely.(6,7,8)

PURPOSE

The aim of the study is to evaluate the epidemiology and risk factors of newborns from hypertensive mothers in the Maternity Hospital of Sibiu Clinical County Emergency Hospital.

MATERIALS AND METHODS

We conducted a retrospective observational case-control study in which there were enrolled 453 newborns admitted in Sibiu Maternity Hospital within the Clinical County Emergency Hospital between 1.01.2015 – 31.12.2016. Of these, 163 newborns came from pregnant women with cardiac pathology.

In the witness group, there were included 290 newborns with the same gestational age and weight \pm 100g.

For each newborn coming from cardiac mother, there were selected from the control group 2 newborns with the same gestational age and weight at birth \pm 100g.

The gestational age of all newborns enrolled in the study was determined by the Ballard score.

The maternal criteria included in the study were: place of origin, gestation degree, parity degree, schooling grade, cardiac pathology.

The fetal criteria included in the study were: presentation, birth path, birth trauma, physiological weight loss, APGAR score, fetal Hb at birth, prolonged jaundice, birth resuscitation, respiratory distress, type of respiratory distress and clinical form, maternal-fetal infections, arterial duct persistence and admission to Neonatology Clinic.

The statistical analysis was performed using SPSS for Windows 10.0; p was statistically significant at values $<$ 0.05 (confidence interval 95%).

RESULTS

During the study, a total of 163 newborns from hypertensive mothers were assisted in the Maternity Hospital of Sibiu Clinical County Emergency Hospital, representing 3.37% of the total number of newborns assisted during that period.

Of the newborns from mothers with cardiac pathology, 55.2% were males and 44.8% females.

In 2015, there were 76 new births from cardiac

¹Corresponding author: Radu Chicea, B-dul. C. Coposu, Nr. 2-4, Sibiu, România, E-mail: radu.chicea@gmail.com, Phone: +40744 695310
Article received on 28.01.2018 and accepted for publication on 29.05.2018
ACTA MEDICA TRANSILVANICA June 2018;23(2):15-16

mothers, while in 2016, there was an increase in the number of newborns from cardiac mothers - the number being 87.

During our study 46% of the newborn came from mothers from rural areas, and 54% came from mothers living in an urban environment.

14 newborns came from twin pregnancy and 149 from monofetal pregnancy.

The lowest birth weight of newborns from mothers with cardiac pathology was 466 g while the highest weight was 5470 g. Most newborns, 55.82%, were normoponderal despite maternal cardiac pathology associated.

Although the variability of weights at birth is quite high, most newborns had birth weights, between 3001- 4000 g (41.71% of them). Only 8.58% of newborns had birth weight above 4000 g.

14.11% of the children had birth weight between 2001 g and 2500 g, and another 14.11% of newborns had the weight at birth between 2501 g and 3000 g.

8.58% of children had weights between 1501 g and 2000 g.

9.20% of cases had birth weight between 1001 g and 1500 g, while only 3.68% of cases had birth weight below 1000 g.

Taking into account the gestational age at birth, 67.8% of the pregnant women gave birth between 37 and 41 weeks of gestation. 1.22% of newborns were born at 41 weeks of gestation, yet the 30.66% of premature babies born from mothers with cardiac pathology is quite high compared to prematurity due to other causes.

18.40% of newborns were born between 34-36 weeks of gestation, while 9.20% were born between 29-33 weeks of gestation. 3.06 cases were severe premature babies born under 28 weeks of gestation, the minimum gestational age being 23 weeks of gestation.

Considering the age of pregnant women, 43.55% of them were aged between 30 and 35 years with variations between 12 and 44 years of age.

3.06% of parturients were under the age of eighteen; 34.35% had ages between 19 to 29 years old at the time of birth and 19.01% were over 36 years old.

As a level of training, most parturients had average education - 49, 7%.

31.9% of pregnant women have higher education while only 1.2% have no studies.

As pre-pregnancy pathology: 13.49% of pregnant women had hypertension, 4.9% hypothyroidism, 3.06% thrombophilia, and 7.36% obesity.

11.65% of pregnant women were diagnosed during pregnancy with premature birth and 6.74% had at least one urinary tract infection during pregnancy.

Among the pregnant women included in the study, 141 developed hypertension during pregnancy and 22 had high blood pressure before pregnancy.

107 pregnant women were at their first birth, 37 at the 2nd birth, and 18 had more than 2 births.

48.24% of pregnant women gave birth via caesarean section due to hypertensive pathology.

incidence of hypertension even if it does not have statistical significance.

In our study, we have found significant differences for fetal weight with smaller weight for newborns coming from hypertensive mothers.

Hypertension is responsible for a high prematurity rate in most cases induced by the caesarean section or labour induction from maternal complications generated by the cardiovascular pathology. In fewer cases, the labour induction or operative delivery was done for fetal pathology. The incidence of premature babies born from mothers with cardiac pathology is quite high compared to prematurity due to other causes.

The most frequent etiology of hypertension is pregnancy induced hypertension at the age of high fertility and chronic hypertension is usually associated with ages over 36 years old.

CONCLUSIONS

The number of women with cardiac pathology before pregnancy or onset in pregnancy is increased according to our study.

Cardiac pathology is common in pregnancy and is associated with an increased number of preterm births.

REFERENCES

1. Gongora MC, Wenger NK. Cardiovascular Complications of Pregnancy. Baker PN, ed. International Journal of Molecular Sciences. 2015;16(10):23905-23928. doi:10.3390/ijms161023905.
2. Mammaro A, Carrara S, Cavaliere A, et al. Hypertensive Disorders of Pregnancy. Journal of Prenatal Medicine. 2009;3(1):1-5.
3. National Institute for the Health of Mother and Child, Alessandrescu - Rusescu, Demographic Health Indicators, <https://iomc.ro/uploads/ftp/pdf/indicatori-demografici-sanatate-2014.pdf>.
4. Radulescu C, et al. Perinatal mortality. Clinical study, PM nr. 2, art. 7, 2014.
5. Roberts CL, Algert CS, Morris JM, Ford JB, Henderson-Smart DJ. Hypertensive disorders in pregnancy: A population-based study. Med J Aust. 2005;182:332-335.
6. Duley L. The global impact of pre-eclampsia and eclampsia. Semin. Perinatal. 2009;33:130-137. doi: 10.1053/j.semperi.2009.02.010.
7. Broekhuijsen K, Ravelli AC, Langenveld J, van Pampus MG, van Den Berg PP, Mol BW, Franssen MT. Maternal and neonatal outcomes of pregnancy in women with chronic hypertension: A retrospective analysis of a national register. Acta Obstet Gynecol Scand. 2015 doi: 10.1111/aogs.12757.
8. Barbosa IR, Silva WB, Cerqueira GS, Novo NF, Almeida FA, Novo JL. Maternal and fetal outcome in women with hypertensive disorders of pregnancy: The impact of prenatal care. Ther. Adv. Cardiovasc. Dis. 2015;9:140-146. doi: 10.1177/1753944715597622.

DISCUSSIONS

The incidence of newborns from hypertensive mothers is high enough to have a good statistical evaluation.

The gender distribution of the new born is similar with data from the literature.

In Romania, there are still present significant differences between people living in rural areas compared with those living in an urban environment, reflected in the higher