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Risk Factors for Hypoglycemia in Newborns as the Basis of Many Types of Human Pathology

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Glucose is the main energy substrate that supports the viability of the body's cells and their physiological development. A deficiency of glucose in the body of a newborn leads to hypoxia and disruption of neurogenesis processes in the brain. The use of the body's fats and proteins as an energy source, in the absence of glucose, does not meet the energy needs and contributes to the accumulation of intermediate toxic products. Children born with hypoglycemia get sick more often, have a shorter lifespan, and during the reproductive period experience infertility and miscarriage more frequently [1]. Therefore, identifying the risk factors for neonatal hypoglycemia expands the preventive capabilities of medicine, strengthens the health of the nation, and its intellectual and reproductive potential!!!

The aim of our study was to identify the predominant risk factors for neonatal hypoglycemia in the city Perinatal Center of Irkutsk named after M.S. Malinovsky in 2024. Women with manifest true diabetes mellitus and previous pancreatic diseases were excluded from the study.

Materials and Methods of the Study

A total of 56 case histories of childbirth and newborns ending with the birth of children with hypoglycemia were analyzed.

The average age of the mothers was 26.6±0.8 years. Among them, 23 women had previously given birth. Preterm births accounted for 18 cases (32.14%). Operative delivery was performed in 12 cases (21.4%).

Results Obtained: Among those examined, gestational diabetes was observed in 14 cases (25%), overnutrition (obesity of varying severity) in 24 cases (42.9%), and preterm births in 18 women (32.1%). The combination of preterm birth and overnutrition occurred in 6 cases (10.7%). The average birth weight of newborns in full-term pregnancies was 2993±248.3 grams, and in preterm pregnancies, 2427±82.6 grams.

The Apgar score for full-term infants averaged 8.8±0.7 points, and for preterm infants, 8.3±1.2 points. Six (10.7%) newborns were identified with signs of diabetic fetopathy, only among women with premature births and increased nutrition. At the same time, diabetic fetopathy was not diagnosed during pregnancy, although ultrasound data showed signs of excessive fetal weight not corresponding to the gestational age. Mild neonatal hypoxia

was diagnosed only in three cases among preterm infants (16.7%). The body mass–height index (BMI) of women with obesity was 35.6, confirming the severity of their metabolic disorders [2].

Conclusion

Thus, according to our data, fetal hypoxia and prematurity were not the leading causes of neonatal hypoglycemia.

At the same time, maternal obesity combined with preterm birth may have caused resistance of the pregnant women's receptor apparatus to insulin, which led to an excessive supply of glucose to the fetus and high functional activity of its pancreas.

Based on the results of our study, in cases where the fetal weight exceeds the 70th percentile for the gestational age or is below the 10th percentile according to ultrasound data, it is necessary, as with gestational diabetes, to conduct dynamic monitoring of the newborn's glucose level in order to promptly correct hypoglycemia.

Conclusions

- Increased nutrition during pregnancy may be one of the leading causes of hypoglycemia in newborns.
- In terms of frequency of newborn hypoglycemia, according to our data, prematurity of the newborn is in second place.
- Only in third place is gestational diabetes.
- In cases of maternal obesity combined with premature pregnancy, it is necessary to determine the blood glucose level in the newborn.

References

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