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A Modern Perspective on Gestational and Perinatal Outcomes in Fetal Macrosomia

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Abstract

The article presents data from the literature concerning current perspectives on the impact of fetal macrosomia on the development of obstetric and perinatal complications. Fetal macrosomia is one of the pressing issues in modern obstetric practice. In recent years, there has been a significant increase in the number of births of infants with high birth weight. This phenomenon has not only medical but also social significance, negatively affecting the health of both the mother and the child.

Keywords: Macrosomia, large fetus, gestation, perinatal outcomes, childbirth.

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1. Introduction

Fetal macrosomia is one of the pressing issues in modern obstetric practice. In recent years, there has been a significant increase in the number of births of infants with high birth weight. This phenomenon has not only medical but also social significance, negatively affecting the health of both the mother and the child. According to statistical data, the incidence of births involving large fetuses is 8–12% of the total number of deliveries. This indicators varies significantly across different countries. The main factors contributing to the development of macrosomia include maternal overweight, genetic factors, diabetes mellitus, and improved socio-economic conditions.

Pregnancy complicated by fetal macrosomia is associated with a high risk for both the mother and the child and often proceeds with various complications. Therefore, in-depth study of this issue and the development of effective management methods are highly relevant tasks. According to data from the literature, the frequency of births involving large fetuses in recent years' ranges from 4.5% to 20% [1–5]. Deliveries of infants weighing 4000–4500 g occur in 7.6% of cases, 4500–5000 g in 1.2%, and 5000 g or more in 0.2% of cases [5]. High rates of maternal birth trauma and unfavorable perinatal outcomes in cases of fetal macrosomia carry significant medical and, undoubtedly, social importance [2, 3, 5].

In cases of spontaneous delivery of a large fetus, newborns

often subsequently exhibit impaired cerebral circulation, as well as symptoms associated with injury to the brachial plexus [6–8]. Disorders of physical and neuropsychological development are observed in more than one-third of such children during the first year of life [6, 7].

One of the most important factors determining the morbidity rate among infants born large is the disproportion between the size of the fetal head and the maternal pelvis during labor [7, 8]. The incidence of a clinically narrow pelvis ranges from 1.4% to 8.5% of the total number of deliveries, with fetal macrosomia accounting for 5.8% to 60% in the structure of this complication [9–11].

The frequency of complications in cases of fetal macrosomia during the antepartum, intrapartum, and postnatal periods significantly exceeds that in patients who deliver infants with average birth weight [2, 3, 6]. According to N.A. Lyalichkina, the rate of pregnancy complications requiring hospitalization in cases of fetal macrosomia is 54.1%, which is comparable to average statistical indicators [2]. However, there is evidence that in 60% of cases, the age of pregnant women carrying a large fetus exceeds 35 years [5]. As a result, pregnancy in most cases occurs against the background of extragenital pathology and has its own specific features [12]. The incidence of early toxicosis in pregnant women with fetal macrosomia ranges from 13.4% to 36.5%, and anemia occurs in up to 74.1% of cases [2, 3].

Preeclampsia (gestosis) occurs in one-third of cases of fetal macrosomia. This is likely associated with the prevalence of alimentary-constitutional obesity (25–72%) among women with fetal macrosomia [5]. Analysis of the structure of pregnancy complications has shown that gestational diabetes mellitus complicates pregnancy in 3.5% to 50% of women carrying a large fetus [2, 5, 10, 11]. The prevalence of cervical insufficiency and threatened miscarriage in cases of fetal macrosomia is twice as high as average statistical indicators and amounts to 7.1% of cases [2].

Fetal macrosomia is associated with polyhydramnios in 8.12–18.2% of cases [2, 3]. The development of polyhydramnios in fetal macrosomia may be обусловлено fetal hyperglycemia and increased osmotic diuresis, which subsequently leads to polyuria [1,9]. Many authors associate polyhydramnios with a general activation of anabolic processes in the placenta–fetus system [12].

The incidence of oligohydramnios in cases of fetal macrosomia is about 3%, which is significantly lower than average statistical indicators [2, 10]. Placental disorders are observed in 20–31.8% of cases of fetal macrosomia, which does not differ significantly from the rates seen in normal fetal weight [2, 6]. Disturbances in the uteroplacental and fetoplacental blood flow system arise due to the increased demands of the growing fetus and the inability of the existing vascular system to adequately meet these demands [1].

According to some authors, the course of pregnancy in cases of fetal macrosomia is more favorable compared to normal fetal weight, except in the presence of gestational or other types of diabetes mellitus. Some researchers believe that the birth of a large fetus is associated with post-term pregnancy. The frequency of post-term pregnancy in cases of fetal macrosomia ranges from 5.8% to 19.5% [3, 4, 7]. The average gestational age in women carrying a large fetus is 6–8 days longer than in women with normal fetal weight [3, 10].

The tendency toward post-term pregnancy and the high incidence of labor abnormalities are largely determined by the “maturity” (readiness) of the birth canal. According to M. Voilyat, in cases of fetal macrosomia, an “immature” birth canal is observed three times more often than in women with normal fetal weight. As a result, preliminary preparation of the birth canal, as well as induction of labor, is often required [2, 8].

A preceding pathological preliminary period is observed in 4.7% of women in labor with fetal macrosomia [2]. Complications during the delivery of a large fetus are mainly обусловлены two factors: fetopelvic disproportion and impaired uterine contractility due to uterine overdistension [3, 9, 12].

Due to the absence of a tight-fitting contact zone between the head of a large fetus and the maternal pelvis, the incidence of untimely rupture of membranes (both premature and early) in fetal macrosomia is three times higher than in physiological labor (22.4–35.6%). In turn, untimely rupture of membranes leads to prolonged or protracted labor, which is обусловлено not only by the large size of the fetus but also by the lack of readiness of the birth canal. A number of authors believe that the slowing of the first stage of labor is primarily caused by developing clinical disproportion. The increase in the duration of the first stage of labor in fetal macrosomia is associated with a high frequency of labor abnormalities, which in 50% of cases are the result of fetopelvic disproportion and progressively increase in direct proportion to fetal weight [2, 3, 9].

Labor stimulation in cases of fetal macrosomia is performed

twice as rarely as in cases with average fetal weight [2]. This is likely due to the fact that one of the most challenging aspects in managing labor with a large fetus is the differential diagnosis between abnormalities of labor activity and a functionally narrow pelvis. A clinically narrow pelvis occurs five times more often in deliveries involving a large fetus compared to those with average fetal weight [1, 3, 4].

Labor with a large fetus is often accompanied by the development of asynclitism. Mild asynclitism does not negatively affect the course of labor and may even facilitate the passage of the fetal head through the plane of the pelvic inlet. However, in some cases, asynclitism may be so pronounced that it hinders or prevents the descent of the head [3, 8, 9]. Markedly pronounced variants of off-axis head insertion are referred to as pathological asynclitism. Pathological asynclitism is one of the signs of a clinically narrow pelvis. Due to the presence of pathological asynclitism, intradural hemorrhages, as well as tears or lacerations of the tentorium cerebelli, may occur during vaginal delivery [6, 8].

A known method for diagnosing the nature of fetal head engagement in the small pelvis during labor involves vaginal examination, where the position of sutures and fontanelles relative to key anatomical landmarks (the pubic symphysis, promontory, and sacrum), as well as the dimensions of the maternal pelvis, are assessed to determine the type of head insertion [31]. However, this method has limited accuracy due to the subjective nature of vaginal examination; moreover, the position of the pelvic axis is not confirmed by objective instrumental diagnostic methods [8].

V.N. Serov and colleagues proposed a method for determining the nature of fetal head engagement during labor. According to this method, ultrasound scanning is used in the laboring woman to assess the fetal position and presentation based on the relationship of the spine and facial part of the skull to the uterine walls. The position of the fetal head relative to the plane of the pelvic inlet is determined by the extent of the head contour located below this plane. Flexion or extension of the head is evaluated by measuring the cervico-occipital angle or the mento-sternal diameter, depending on the type of presentation (anterior or posterior). The position of the sagittal suture of the fetal head is assessed based on the location of the orbits relative to the midline of the body and their mutual arrangement. The type and degree of asynclitism are determined by the position of the orbits relative to the plane of the pelvic inlet and their vertical displacement in relation to each other. The optimal type of fetal head engagement during labor is the anterior occiput presentation, which has the following distinctive features on ultrasound examination: the fetal spine is positioned anteriorly and to the left, the facial part of the skull is located posteriorly and to the right, one-third of the head contour lies below the plane of the pelvic inlet, the head shows moderate flexion (cervico-occipital angle between 120° and 140°), and there is first-degree posterior asynclitism (the posterior orbit is lower than the anterior, with vertical displacement not exceeding 2.5 cm). The sagittal suture lies in the right oblique diameter of the pelvic inlet (the anterior orbit is to the right of the midline, the posterior orbit at the midline).

If deviations from this described type of head engagement are detected, pathological engagement is diagnosed. This is considered one of the signs of a functionally narrow pelvis and serves as a basis for revising the labor management strategy [3].

In cases of fetal macrosomia, there is a high incidence of birth trauma for both the fetus and the mother. This is due to the large size of the fetal head, which may render even a normally sized maternal pelvis insufficient [5, 9, 11]. Labor in such cases can be compared to labor with a narrow pelvis.

In addition to the large head size, a macrosomic fetus often has denser cranial bones and reduced molding capacity. Labor with such a head proceeds with some difficulty, and obstetric interventions or other assisted delivery methods may sometimes be required to complete the birth [5, 6, 9].

The frequency of operative delivery methods in cases of fetal macrosomia is significantly higher than in normal fetal weight. According to various authors, the rate of cesarean section in fetal macrosomia ranges from 25.8% to 89%, the use of obstetric forceps ranges from 0% to 2.3%, and vacuum extraction occurs in 4.2% of cases [5, 9].

The leading indications for emergency operative intervention among patients with fetal macrosomia are abnormalities of labor activity, such as uterine weakness and discoordination, fetopelvic disproportion, acute fetal hypoxia, and threatened asphyxia [2].

The necessity of planned cesarean section for fetal macrosomia remains a matter of debate. Most authors agree that, due to the lack of reliable methods for accurately determining fetal weight, a birth weight over 4500 g can serve as a criterion for elective operative delivery [3, 5].

The performance of elective cesarean section in cases of

fetal macrosomia is primarily limited by the frequency of postoperative complications [9]. The presence of pregnancy and labor complications in combination with fetal macrosomia is unquestionably an indication for cesarean section [3, 6, 9].

Obstetric trauma of the soft tissues of the birth canal during delivery of a large fetus is significantly higher than in deliveries of normal-weight infants [5]. For example, studies by K.P. Lipscomb showed that third-degree perineal tears were diagnosed five times more often in deliveries involving a large fetus compared to those with average fetal weight [3].

According to M. Najafian et al., the frequency of birth trauma in macrosomic deliveries does not differ significantly from that in low-birth-weight infants: perineal tears occur in 1.7–4.9% of cases, and cervical tears in 0.7–4.7% [2, 5].

The incidence of hypotonic hemorrhage and the overall volume of blood loss in the early postpartum period in cases of fetal macrosomia is 3–5 times higher than average due to reduced contractile capacity of the overdistended myometrium and the larger postpartum wound surface area [2, 3, 5, 7]. Blood loss during delivery in cases of fetal macrosomia averages 366.24 ± 158.64 ml, compared to 231.67 ± 155.63 ml for infants of average weight [2].

The late postpartum period in cases of fetal macrosomia is more frequently complicated by subinvolution of the uterus, postpartum endometritis, and other purulent-septic conditions due to significant obstetric trauma of the soft tissues of the birth canal and overdistension of the myometrium. These complications often require continued hospitalization and substantially reduce the woman's reproductive potential. Hematometra is diagnosed in 16.0% of cases, and uterine subinvolution in 10.6% [2, 3, 5]. Purulent-septic complications, such as endometritis, develop in 1.2% of women, while the need for instrumental revision of the uterine cavity occurs in 12.9% of patients [2].

According to M. Boulvain et al., induction of labor in women carrying a large fetus increases the incidence of perineal trauma but does not affect the frequency of cesarean section [2,8].

2. Conclusion

The presented data not only highlight the need for an individualized approach to the delivery of women carrying a large fetus but also underscore the importance of further improving methods for diagnosing fetal macrosomia and predicting labor outcomes. Macrosomic newborns, regardless of their overall condition at birth, should be classified as a high-risk group due to various complications in the early neonatal period, a high incidence of birth trauma sequelae, and reduced physiological reactivity during the first months of life.

References

1. Agudelo-Espitia V., Parra-Sosa B. E., Restrepo-Mesa S. L. Factors associated with fetal macrosomia //Revista de saude publica. – 2019. – T. 53. – P. 100.
2. Beta J. et al. Maternal and neonatal complications of fetal macrosomia: cohort study //Ultrasound in Obstetrics & Gynecology. – 2019. – T. 54. – №. 3. – P. 319-325.
3. Ewington L. et al. Multivariable prediction models for fetal macrosomia and large for gestational age: A systematic review //BJOG: An International Journal of Obstetrics & Gynaecology. – 2024. – T. 131. – №. 12. – P. 1591-1602.
4. Fuchs F. et al. Adverse maternal outcomes associated with fetal macrosomia: what are the risk factors beyond birthweight? //BMC pregnancy and childbirth. – 2013. – T. 13. – №. 1. – P. 90.
5. García-De la Torre J. I., Rodríguez-Valdéz A., Delgado-Rosas A. Risk factors for fetal macrosomia in patients without gestational diabetes mellitus //Ginecologia y obstetricia de Mexico. – 2017. – T. 84. – №. 03. – P. 164-171.
6. Júnior E. A. et al. Macrosomia //Best practice & research Clinical obstetrics & gynaecology. – 2017. – T. 38. – P. 83-96.
7. Mohammadbeigi A. et al. Fetal macrosomia: risk factors, maternal, and perinatal outcome //Annals of medical and health sciences research. – 2013. – T. 3. – №. 4. – P. 546-550.
8. Moodley T., Moodley J. A retrospective identification of risk factors associated with fetal macrosomia //African Journal of Reproductive Health/La Revue Africaine de la Santé Reproductive. – 2022. – T. 26. – №. 7. – P. 127-134.
9. Pahlitzsch T. M. J. et al. Influence of foetal macrosomia on the neonatal and maternal birth outcome //Geburtshilfe und Frauenheilkunde. – 2019. – T. 79. – №. 11. – P. 1191-1198.
10. Ruiz-Canchucaj A., Cano-Cardenas L. Maternal factors associated with fetal macrosomia according to the national survey of demography and family health in 2020 //Revista de la Facultad de Medicina Humana. – 2022. – T. 22. – №. 3. – P. 489-496.

11. Usta A. et al. Frequency of fetal macrosomia and the associated risk factors in pregnancies without gestational diabetes mellitus //The Pan African Medical Journal. – 2017. – T. 26. – P. 62.

12. 12. Vitner D. et al. Does prenatal identification of fetal macrosomia change management and outcome? //Archives of gynecology and obstetrics. – 2019. – T. 299. – №. 3. – P. 635-644.