

THE CONTRIBUTION OF ULTRA SOUND GESTATIONAL CONTROL AFTER 32TH WEEK IN PREVENTION OF PERINATAL MORTALITY

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Abstract: *The aim of this study is to show the significant submitting in ultrasound control after the biophysical embryonic profile of 32th gestational week, in order to restrict perinatal mortality. During preliminary examination to discover the cause of a newborn death which was born at 40th gestational week with weight 2.606 gr. Its mother was smoker (10-12 cigarettes/day) for more 12 years until the moment she knew that she was pregnant. The ultrasound control at 12th, 26th and 32th gestational week and the electrotocardiography examination during the pregnancy and during birth was normal. The parturient who had submitted epidural analgesia, gave birth after 8 hours. The delivery was not laborious and the woman's clinical condition during birth was always stable. After newborn's birth it was apneic, pallid and without reflexes. In toxicological analysis was not found toxic substances or drugs in newborn's blood. Histological examination showed cerebral edema with meninges', level's, spleen's, reins' and adrenal's congestion. At pulmonary level was found alveoli's partial expansion. The placenta was not sent to examination. The conclusion of forensic report was that the newborn was born alive and died by perinatal asphyxia. Comparing the expecting newborn's weight and its weight of birth, we evaluated the development's curves and were found statistical significant deference between the newborn's weight and the expecting birth weight. The baby was suffering growth retardation due of placenta's pathology. In case of ultrasound control after 32th gestational week, the intrauterine hypoxia probably would have discovered and baby would be survived if it was born 2 or 3 weeks ago by caesarean.*

1 INTRODUCTION

In 2001 infant mortality was less than 6‰ in the members countries of the European Union and 6,8 ‰ in USA, although in the developing countries it was still high (up to 64‰). In Greece during the past 60 years the infant mortality decreased by 94%, from 122‰ in 1937 down to 7,3‰ in 1996. During the same period, the post neonatal and neonatal mortality decreased by 98% and 86% respectively. The perinatal mortality in Greece decreased from 24‰ in 1983 to about 10‰ in 1998. Most of perinatal deaths are caused by complications of pregnancy and delivery, which in addition make a significant contribution to the late neonatal and post neonatal deaths in the developed countries, whereas in the developing countries infections and nutritional deficiencies are main causes of the postnatal deaths. Based on these data, priority interventions include further improvements in the care given to pregnant women and new born infants.

Intrauterine growth restriction is the failure of the fetus to achieve his intrinsic growth potential and is associated with significantly increased perinatal morbidity and mortality. Intrauterine growth restriction is not a specific disease entity with unique pathophysiology, but the result of suboptimal intrauterine growth condition with a variety of disorders from genetic to metabolic, vascular, coagulative, autoimmune, as well as infectious. Affects 10% of pregnancies and perinatal mortality rates are 4-8 times higher for infants with this disorder. Newborns with intrauterine growth restriction present reduced fat mass and undergo adaptational changes of endocrine/ metabolic mechanisms as a result of intrauterine malnutrition. Recently, it was shown that fat secreted adipokines such as novel adipokine improving glucose tolerance trough insulin mimetic effects and vaspin, profoundly influence insulin sensitivity and energy metabolism.

Intrauterine growth retardation, or being small for gestational age, has a life- long impact

on fetus's potential for development and survival.

Newborns that have intrauterine growth retardation are at risk for increased perinatal mortality, birth adaptation complications, including perinatal acidosis, hypoglycemia, coagulation abnormalities and selected immunologic deficiencies.

The brain injury in perinatal hypoxia-ischemia may be mediated in part by free radical formation from excessive hydrogen peroxide or nitric oxide production. 500 consecutive Danish women who had full-term babies were interviewed on the third or fourth day post-partum and asked about smoking in all household members. Exposure to smoking by the mother was found to reduce birth-weight, and indirect or passive exposure to smoking by the father had nearly as large (66%) an effect. On average, birth-weight was reduced by 120 g per pack of cigarettes (or cigar/pipe equivalent) smoked per day by the father. This relation remained statistically significant after controlling for mother's age, parity, and alcohol and tobacco consumption during pregnancy, illness during pregnancy, and social class and sex of the baby. The effect of passive smoking was greatest in the lower social classes.

The aim of this study is to show the significant submitting in ultrasound control after the biophysical embryonic profile of 32th gestational week, in order to restrict perinatal mortality.

The routine follow up during pregnancy can often lose cases at risk to die by intrauterine death. 1/3 neonates who die in uterine are over 37 weeks old. Most of pregnant women don't know about the case of intrauterine death, which in Great Britain is 1/200 pregnant women. There is not a data based in national level about intrauterine deaths. In 3/4 of cases of intrauterine deaths, it found out that the pregnant women had not a quality perinatal care. They is not a sufficient number of specialists who can exam the dyed neonates (Pathologoanatomists). In 2008 in Greece, the frequency of intrauterine deaths in women >24 weeks 3,3/1000 births. The fundamental reasons of perinatal death are four: i) congenitive abnormalities, ii) premature birth, iii) placenta's insufficiency, iv) errors and accidents during labor. The cause of neonates' death is not known, but when it happens is due of abnormal development of embryo or in placenta's insufficiency. In cases of placenta's insufficiency with intrauterine growth retardation, ultrasound- Doppler can value the embryo's oxygen, appreciating and comparing the pathological founds in multiple histological sections.

The spectral curves of the averaged fetal and maternal electrocardiograms as recorded from the abdomen were studied. It was found that the poor signal to noise ratio, the high rate of coincidence between maternal and fetal ECGs and the similar frequency spectra of the signal and the noise components make an analysis of the abdominal ECG using conventional filtering technique rarely possible and an alternative method should be used.

2 MATERIAL AND METHOD

During preliminary examination to discover the cause of a newborn death which was born at 40th gestational week with birth weight 2.606 gr. It was the first pregnancy of this woman with none pathological found during the 40 weeks. We asked the familiar and personal anamnestic of newborn's parents and we found out that the woman was smoker (10-12 cigarettes/day) for more 12 years until the moment she knew that she was pregnant. The blood exams, ultrasound control at 12th, 26th and 32th gestational week and the electrocardiography examination during the pregnancy and during birth was normal. Her Gynecologist answered to our questions regards the missing ultrasound control after the 32th week of pregnancy and he said that it was not necessary, because the echocardiography was normal all the times that the pregnant visit him. He added too, that there was none other pathological found during the nine months of pregnancy's following up. The doctor informed us that the Gynecologist of her second pregnancy followed the same method of follow up and the newborn's death was incidental. Asking him about the newborn mother's anamnestic, we discovered, that he did not know, that she was a smoker. Missing this information he did not probably evaluate the high risk of his patient. Parturient who had submitted epidural analgesia, gave birth after 8 hours. The delivery was not laborious and the woman's clinical condition during birth was always stable. After her birth the newborn was apneic, pallid and without reflexes. The team of Pediatrics tried to save the neonate submitting it in basic and advanced life support, but without any result.

3 RESULTS

In toxicological analysis was not found any toxic substances or drugs in newborn's blood. Histological examination showed cerebral edema with meninges', level's, spleen's, reins' and adrenal's congestion. At pulmonary level was found alveoli's partial expansion. The placenta was not sent to examination. We asked the specialist why he did not sent the placenta to forensic examination and he answered us that he was in panic for newborn's life and he lost it by the personal of cleaning services.

The conclusion of forensic report was that the newborn was born alive and died by perinatal asphyxia, without to determinate the moment of death and the cause of perinatal asphyxia. We asked answers from almost all the personnel who were present during delivery and at least we called the gynecologist, who made the ultrasound control to die newborn's mother. The specialist confirmed us that the development's curves and were found statistical significant deference between the newborn's weight and the expecting birth weight. That means that the embryo was suffering by intrauterine growth retardation and the delivery should take place as soon as possible by caesarian, especially after 34th week of pregnancy.

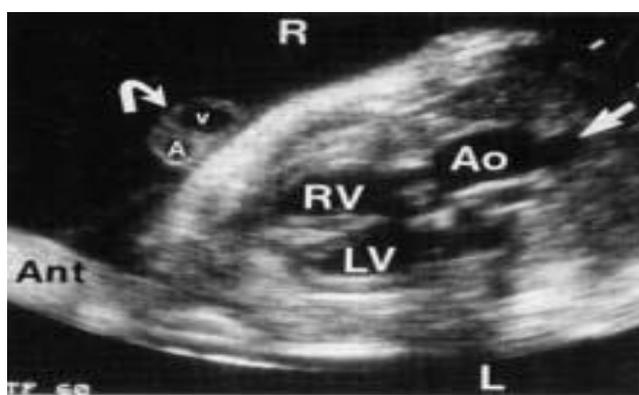


Figure 1. Transverse section of the fetal chest in a fetus with double outlet right ventricle. The umbilical cord is seen anterior to the chest (curved arrow). RV, right ventricle; LV, left ventricle; Ao, aorta; Ant, anterior; L, left; R, right; V, umbilical vein; A, single umbilical artery.

4 CONCLUSIONS

Comparing the expecting newborn's weight and its weight of birth, we evaluated the development's curves and were found statistical significant deference between the newborn's weight and the expecting birth weight. In case of ultrasound control after 32th gestational week, the intrauterine hypoxia probably would have discovered and baby would be survived if it was born 2 or 3 weeks ago by caesarean. Each year, 814,000 neonatal deaths and 1.02 million stillbirths result from intra partum related causes, such as intrauterine hypoxia. Almost all of these deaths are in low- and middle-income countries, where women frequently lack access to quality perinatal care and may delay care-seeking. Approximately 60 million annual births occur outside of health facilities, and most of these childbirths are without a skilled birth attendant. Conditions that increase the risk of intrauterine hypoxia—such as pre-eclampsia/eclampsia, obstructed labor, and low birth weight—are often more prevalent in low resource settings. Intrapartumrelated neonatal deaths can be averted by a range of interventions that prevent intrapartum complications (eg, prevention and management of pre-eclampsia), detect and manage intrapartum problems (eg, monitoring progress of labor with access to emergency obstetrical care), and identify and assist the non-breathing newborn (eg, stimulation and bag-mask ventilation). Simple, affordable, and effective approaches are available for low-resource settings, including community-based strategies to increase skilled birth attendance, partograph use by frontline health workers linked to emergency obstetrical care services, task shifting to increase access to Cesarean delivery, and simplified neonatal resuscitation training (Helping Babies Breathe SM). Coverage of effective interventions is

low, however and many opportunities are missed to provide quality care within existing health systems.

In sub-Saharan Africa, recent health services assessments found only 15% of hospitals equipped to provide basic neonatal resuscitation. In the short term, intra partum-related neonatal deaths can be substantially reduced by improving the quality of services for all childbirths that occur in health facilities, identifying and addressing the missed opportunities to provide effective interventions to those who seek facility-based care. For example, providing neonatal resuscitation for 90% of deliveries currently taking place in health facilities would save more than 93,000 newborn lives each year. Longer-term strategies must address the gaps in coverage of institutional delivery, skilled birth attendance, and quality by strengthening health systems, increasing demand for care, and improving community-based services. Both short- and long-term strategies to reduce intrapartum-related mortality should focus on reducing inequities in coverage and quality of obstetrical and perinatal care.

Continuous electronic fetal monitoring was developed in the 1960s to assist in the diagnosis of fetal hypoxia during labor. Continuous electronic fetal monitoring has been shown to reduce the incidence of neonatal seizures, but there has been no beneficial effect in decreasing cerebral palsy or neonatal mortality.

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