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EDITORIAL / УВОДНИК

Intrauterine growth restriction: Causes and consequences

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The prenatal period of growth and development represents a very delicate phase of life exposed to numerous possible negative effects. One of them is intrauterine growth restriction (IUGR), also known as fetal growth restriction, i.e. birth with body weight below the 10th percentile in relation to the corresponding gestational age and sex [1]. The importance of adequate prenatal nutrition according to this optimal early development program was first pointed out by an English epidemiologist David Barker, less than three decades ago [2]. Namely, he noted the high association of IUGR with the occurrence of abdominal (visceral) obesity and metabolic syndrome in adulthood, i. e. insulin resistance, type II diabetes mellitus, and atherosclerosis and its consequences. Subsequently, only the confirmation of the "Barker hypothesis" in the narrow sense was followed by numerous evidence regarding the extremely high importance of early development programming and other aspects of human health [3–7]. The consequences of IUGR, as well as numerous other negative phenomena, are based on specific epigenetic mechanisms, such as DNA methylation, histone modification, and others, which by modifying gene expression result in a less functionally valuable and vulnerable phenotype [3, 6].

According to literature data, IUGR globally occurs with a prevalence of 3–10% [8]. The causes of this pathological phenomenon are numerous, such as placental abruption or abnormal insertion, maternal undernutrition, cigarette smoking, arterial hypertension, renal disease, anti-phospholipid syndrome, vitamin D deficiency and drug abuse, fetal chromosomal/structural anomalies or chronic intrauterine infection, and others [9–13].

In addition to the negative effects that occur in the adult age, IUGR complicates more frequent early postnatal problems such as asphyxia, hypothermia, hypoglycemia, polycythemia, and many more, when compared to their gestational age corresponding counterpart [5, 6, 8, 14]. Also, children who are born small for gestational age (SGA) have a predisposition to accumulation of fat mass, especially intra-abdominal [8]. Therefore, rapid weight gain during infancy of these children represents an additional risk factor for the occurrence of metabolic syndrome and its negative consequences in adult age [8].

The aforementioned facts point to the importance of IUGR as a worldwide health problem [8]. Although there are conditions where IUGR is an inevitable phenomenon, in many cases it can be prevented [6]. Although due to catch-up growth most of infants born SGA reach their peers in longitudinal growth at the age of two years, about 10% of them continue to fall below the third percentile of height into adulthood [8]. In order to eliminate additional risk factors for the subsequent occurrence of metabolic syndrome, it is important to point out that the nutrition of these infants must be focused on the prevention of obesity according to which they are strongly predisposed [6, 8].

Papers published in this issue of the Serbian Archives of Medicine deal with exclusive latest knowledge and make a significant contribution to clarifying these disorders, their early detection and treatment [15–19].

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