

Abstract

Aim of the study. In mammals, including humans, the dominance of maternal influence on fetal size is manifesting. The main known limits from non-genetic components causing the physiological variation of the birth weight are maternal skeletal dimensions (body height and weight) and parity. The main aim of our study is to analyze the relationships between maternal height, maternal weight at the beginning and at the end of gravidity, and anthropometric parameters of a newborn.

Data and Methods. Our study is based on transversal anthropometric data of 201 newborns (92 boys, 109 girls) born in Regional Hospital Kladno during one year (from September 2010 till August 2011), and their mothers. In one set of newborns ($n = 156$) 24 different body sizes were measured in detail. In the second group ($n = 45$) only birth weight, birth length and head circumference of the newborn were registered. Somatic characteristic of mothers were gathered by questionnaire.

Results. The average value of the birth weight of newborns (boys: $\bar{x} = 3\,318$ g, girls: $\bar{x} = 3\,232$ g), maternal height ($\bar{x} = 167,3$ cm) and maternal pregravid weight ($\bar{x} = 64,7$ kg) correspond to the reference values. The maternal average age is 29,9 years. Statistically significant dependence can be seen between the birth weight and birth length of a newborn with the maternal body height ($r = 0,441$; $p < 0,001$ and $r = 0,396$; $p < 0,001$, respectively). Correlation between maternal body weight at the beginning of gravidity with newborn birth weight ($r = 0,165$; $p = 0,021$) and with newborn birth length ($r = 0,188$; $p = 0,008$) is very weak. Maternal body weight at the end of gravidity correlates with newborn birth weight ($r = 0,220$; $p = 0,002$) and with newborn birth length ($r = 0,228$; $p = 0,001$) on a statistic significant level. There is no correlation between maternal weight gain during pregnancy with birth weight of a newborn ($r = 0,056$; $p = 0,432$) or with birth length of a newborn ($r = -0,001$; $p = 0,984$).

Conclusions. Maternal body height is one of the main causes for physiological variation of birth parameters of a newborn. Maternal body weight has on the fetal parameters only low influence. Our findings and identified relationships are of considerable clinical importance. We suggest a change of classification of newborns in obstetric and neonatal practice. Following the international literature we recommend to consider by the evaluation of the anthropometric parameters of a newborn also the physical parameters of the mother.