

Anthropometric Studies of Romany (Gypsy) Newborns in East Slovakia Delivered Within 1991-1992

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ABSTRACT The birth weights, the lengths, head and breast circumference and low birth weight occurrence of 428 Romany (Gypsy) and 460 non-Romany fullterm newborns in East Slovakia spontaneously delivered within 1991-1992 were studied. The comparison of the average values between Romany fullterm newborn and non-Romany ones demonstrated statistically significant lower values of Romany newborns. We refer the trend of lowering the average values of birth weight, lengths, head and breast circumference in fullterm newborns from East Slovakia within the 20 years.

INTRODUCTION

Approximately 400,000 Romanies (Gypsies) live in Slovak Republic, their highest concentration being found in East Slovakia. While the increase in Slovak population growth is low due to the low birth rate, an explosion within the Romany population occurred similarly with many non-European nations in developing countries where the hygienic-epidemiological situation and nutrition improved. From time immemorial the somatic characteristics of newborns were followed. The birth weight provides an important information, so this parameter became an object of interest for several researchers. Hyten and Leitchova (1971) elaborated the stated data. The summary of birth weights regarding the ethnic aspect was published by Meredith (1970).

Our paper aim is to study the basic somatic parameters of East Slovakian fullterm newborns considering the ethnic differences of Romany children born within years 1991-1992. Basic physical parameters of East Slovakian newborns within years 1968-1972 were described in the previous publications (Bernasovský et al., 1979).

Aiming to verify the differences we compared the data from two periods.

MATERIAL AND METHODS

The set was formed by 428 Romany and 460 non-Romany newborns spontaneously delivered within 1991-1992 on 2nd Gynaecological Hospital in Košice (East Slovakia). No prematurely born children, i.e. born before the gestation week 38, twins, dead born children or children born with the stated development defect or by the operations deliveries were included. Mothers with the stated gestose, diabetes mellitus, bleeding or some other pregnancy menace were excluded as we tried to approximate towards the healthy standards requirements. The basic somatic parameters of the examined children were recorded: the birth weight (M71), the length, (M1), head circumference (M45), breast circumference (M61) and low birth weight occurrence. The result were allocated by the unbinary t-test and the statistical significance was given in the tables by one to three crosses according the probability value (*for $P < 0.05$, ** for $P < 0.01$ and *** for $P < 0.001$).

RESULTS AND DISCUSSION

The average birth weights, lengths, head and breast circumferences of the fullterm Romany and non-Romany newborns delivered within 1991-1992 and comparison with the data of fullterm newborns spontaneously delivered within 1968-1972 (Bernasovský et al., 1979) are given in tables 1-4. As seen, the values of Romany newborns present clear significantly lower values as compared with the non-Romany fullterm newborns. These differences are highly statistically significant. Comparing the present results of our fullterm Romany and non-Romany newborns with the data 20 years ago (Bernasovský et al., 1979), highly significant low birth weight, lengths, head and breast circumferences

are demonstrated. We can state that the Romany newborns differ substantially from the other population. The question arose whether the World Health Organization limit for the low birth weight 2500 g is correct for Romany fullterm newborns. The low birth weight (LBW) occurrence in Romany fullterm newborns is given on table 5. For comparison the data within the years 1968-1972 (Bernasovská, 1977) are given. As seen, when the fullterm Romany newborns were evaluated in accordance with WHO limit (2500 g), 8.4 and 8.6% children weighted less than 2500 g, but the decrease in limit to 2250 g caused the decrease 2.3 and 2.03 corresponding with

the percentual representation among non-Romany newborns (Bernasovský et al., 1979). The similar low birth weight occurrence was noted by Doležalová et al. (1967) for Prague fullterm newborns.

Discussion about the newborn anthropometrical data is very complicated due the fact of the generally accepted and reproducible data. The statistics of the birth somatic data comprises mostly all living or dead born children, anatomically normal or with the malformations aged 28-44 weeks. Also the newborn hypotrophy problems represent often discussed matter (Brandt, 1985; McLaren and Burman, 1983; Přibyllová, 1990).

Table 1: Average birth weight of Romany and non-Romany fullterm newborns delivered within 1991-1992 and comparison with of fullterm newborns 20 years ago (Bernasovský et al., 1979)

Years of investigation			1991-1992			1968-1972		
			<i>n</i>	Mean (g)	Sem	<i>n</i>	Mean (g)	<i>t</i>
Romany newborns	Boys	220		3033.77	29.59	1182	3123.51	12.60
	Girls	208		2950.82	26.73	1082	3015.34	12.07
Non-Romany newborns	Boys	219		3341.64	31.65	1212	3493.23	13.55
	Girls	241		3274.48	27.70	1208	3337.09	13.32

Table 2: Average birth length of Romany and non-Romany fullterm newborns delivered within 1991-1992 and comparison with of fullterm newborns 20 years ago (Bernasovský et al., 1979)

Years of investigation			1991-1992			1968-1972		
			<i>n</i>	Mean (cm)	Sem	<i>n</i>	Mean (cm)	<i>t</i>
Romany newborns	Boys	220		48.63	0.15	1182	49.22	0.063
	Girls	208		48.04	0.14	1082	48.55	0.059
Non-Romany newborns	Boys	249		50.26	0.15	1212	51.09	0.059
	Girls	241		49.82	0.12	1208	50.18	0.057

Table 3: Average birth head circumference of Romany and non-Romany fullterm newborns delivered within 1991-1992 and comparison with of fullterm newborns 20 years ago (Bernasovský et al., 1979)

Years of investigation			1991-1992			1968-1972		
			<i>n</i>	Mean (cm)	Sem	<i>n</i>	Mean (cm)	<i>t</i>
Romany newborns	Boys	220		33.07	0.10	1182	34.09	0.063
	Girls	208		32.66	0.09	1082	33.50	0.070
Non-Romany newborns	Boys	249		34.17	0.10	1212	35.18	0.046
	Girls	241		33.54	0.08	1208	34.48	0.047

Table 4: Average birth breast circumference of Romany and non-Romany fullterm newborns delivered within 1991-1992 and comparison with of fullterm newborns 20 years ago (Bernasovský et al., 1979)

Years of investigation			1991-1992			1968-1972		
			<i>n</i>	Mean (cm)	Sem	<i>n</i>	Mean (cm)	<i>t</i>
Romany newborns	Boys	220		31.77	0.13	1182	33.12	0.097
	Girls	208		31.64	0.11	1082	32.83	0.101
Non-Romany newborns	Boys	249		32.63	0.12	1212	34.04	0.057
	Girls	241		32.40	0.12	1208	33.45	0.061

Table 5: Occurrence of low birth weight in Romany fullterm newborns. Comparison with the data 20 years ago (Bernasovská et al., 1977)

	Total	LBW occurrence according			
		WHO limit 2000 g		Our limit 2250 g	
		n	%	n	%
Romany newborns 1991-1992	428	36	8.41	10	2.34
Romany newborns 1968-1972 (Bernasovská et al., 1977)	2246	195	8.59	46	2.03

In Anglo-American literature the eutrophic newborns are designated MGA (appropriate for gestational age), the hypotrophic as SGA (small for gestational age) and newborns with higher weight LGA (large for gestational age). According Poláček et al. (1981) the newborn with the birth weight lower than the 5th percentil of the given gestational age within the corresponding population is designed to be hypotrophical. According to Lubchenco et al. (1966), Voght et al. (1980) and Fitzhardinge and Steven (1972) these newborns with the birth weight lower than the 10th percentil of given age and population are designed to be hypotrophical ones.

Within the common praxis we usually agree with the affirmation that the child is hypotrophical or hypertrophical. Rohrer's index as determinant of the whole proportionality is not calculated within the common praxis, the index reference value are mostly not available. According Lubchenco et al. (1966) Rohrer's index (RI) values increase within the gestation week 30 and 40 from 2.25 to 2.55 (the 5th percentil). According to Miller and Hassanein (1971) Rohrer's index is changed within the gestational week 30-38 to 2.25 and 2.55. Also non-Romany fullterm newborn from East Slovakia we observed RI values increase within week 37-40 from 2.46 to 2.79 and in Romany fullterm newborns from 2.50 to 2.62 (Bernasovský et al., 1981). Rohrer's index variation depends on the relation between the newborn weight and length.

One criterion represents that the fullterm limit as the time concept determining the pregnancy length. In our group the children born after pregnancy week 37 are considered to be fullterm. As stated, the birth weight and the length of Romany newborns were inquired by Pogačnik (1968),

Zeman (1968), Malá (1973), Malá and Machová (1978). The mentioned authors reported lower birth weight and length values in comparison with the non-Romany population. Our results of East Slovakia Romany newborns manifest higher values in comparison with the above mentioned authors being caused by the fact that the East Slovakia children group is formed by fullterm newborns in contrast to the groups studies by the mentioned authors regardless the pregnancy duration till the delivery.

The newborn body weight seems to be the most attainable and available parameter reflecting the whole complex of intrauterine environmental influences. In the world literature there are some papers studying the fetus body weight development within the pregnancy (Gruenwald and Minh, 1961; Gruenwald, 1966; Lubchenco et al., 1963). Interpreting the facts influencing the newborn growth and development the ethnik aspect must be considered. In the book of Hytten and Leitchová *The Physiology of Human Pregnancy* (1971), describe of lower birth weights of American Negro children compared with the white ones. The Chinese children born in China are lighter than those born in Europe. The child of the well-off Chinese woman living in Hawaii, however, is well comparable with the European one. Indian children are usually smaller in all parameters, whenever, they were born in India, South Africa or Malaysia. In India the reason for the lower birth weight may be the insufficient nutrition and the entirely bad life conditions, though also the children of well-off mothers in Calcutta and Madras (Mukherjee and Biswas, 1959; Achar and Yankauer, 1962) have birth weight under the European standard and Indians living in Africa posses the higher life standards in comparison with the Negroes. Dawson et al. (1982) pointed out that the Indian newborns are essentially lighter than European ones with the practical impact in paediatrics as Indian newborns weighting 2500 g are better off as compared with the European ones with the same weight. The author proposes the elaboration of the new special weight standard for the Indian children.

High statistically significant differences were found between the average birth weight, length as well as head and breast circumference in Romany and non-Romany newborns of East

Slovakia. Comparing our results of Romany and non-Romany newborns with the Indian data the Romany newborns demonstrated higher birth weight, body length, head and breast circumference values. These differences could be explained by the fact that the Indian authors studied the newborn group regardless the pregnancy duration and the mother's socio-economical classes were lower.

As generally known, the basic anthropometrical data of male newborns are higher than those of female newborns. We observed these differences studying the body weight, body length the head and breast circumferences of fullterm Romany East Slovakia newborns.

As early as 1918, Ylppo (1919) proposed the classification of prematurity as birth weights lower than 2500 g. Later on this criterion was accepted in the praxis. In the fifties, while determining the maturity as well as the survival prognosis, attention was paid to pregnancy duration in relation to the birth weight (Clifford, 1962; McKeown and Gibson, 1951). These studies suggested that not all children with a birth weight under 2500 g can be considered premature.

The World Health Organization suggested to replace the term premature by the term babies with birth weights lower than 2500 g. Children born before gestation week 37 are considered to be preterm. As for our population, the WHO criterion applies well for children with birth weight below 2500 g. This distinction was confirmed by the Prague fullterm newborns (Doležalová et al., 1967), and by our observations in fullterm non-Romany East Slovakia newborns. Our results, however, indicate that the limit value 2500 g for low birth weights in Romany fullterm newborns determined by two standard deviations (Martin and Saller, 1957), is not quite accurate and there is need to decrease this limit to 2250 g.

Data about low birth weight of Romany newborns are quoted by Malá (1973) and Zeman (1968). These authors, however, studied the Romany newborns regardless the pregnancy duration. Malá (1973, 1975) reports a 19.5% birth weight lower than 2500 gm in the Romany newborn group from Teplice and about 12.8% in the group from Hradec in Czechs. Relatively high low birth weight presence (36.9%) is referred by Zeman (1968) for Romany Prague newborns. In the group of East Slovakia Romany newborns

born after the pregnancy week 37, 8.9% children with lower birth weight than 2500 g were noted. Applying our proposed limit for low birth weight only 2.03% children weighed less than 2250 g (Bernasovská et al., 1977). As seen in our results, with the application of WHO limit (2500 g) a similar occurrence of low birth weight was observed in non-Romany East Slovakia newborns as in those from Prague (Doležalová et al., 1967). We believe this finding allows us to declare that the low birth weight limit we found for Romany fullterm newborns is biologically correct. The proposal to change the low birth weight in Romany newborns is not only a statistical determination, it is also recommendation for the clinical practice how to secure care of preterm children. As the practice shows, fullterm Romany newborns with birth weights under 2500 g but more than 2250 g, demonstrated themselves mostly as the mature children. They are able to adapt themselves to their environment better in comparison with the non-Romany children who manifested the prematurity more intensely though given the same care. Reducing the limit of low birth weight for fullterm Romany newborns would result in lowering the number of Romany newborns in hospital departments for premature babies and have positive economical impact.

Comparing the basic somatic parameters in fullterm Romany and non-Romany newborns, born within the years 1991-1992 with results of basic physical parameters study in East Slovakia newborns within years 1968-1972 (Bernasovský et al., 1979) noted statistically significant lower values of birth weight, the length, head and breast circumference.

Presented differences could be explained as follows:

1. The prenatal development of Romany newborns is influenced by two groups of factors inflicting the foetus: the first group of negative factors is formed by the insufficient care and attendance of the Romany mothers about their pregnancy. Frequently, pregnancy ends within the short time period, the deliveries in very young age or in the age not long before the climacterium. Some mothers also show life styles non permitting positive foetal growth. The second group is formed by the ethnic factors important by influencing the

Romany newborn somatic development being caused by Indian origin of Romanies.

2. Lower somatometric data of non-Romany newborns would be taken into relation with a decrease in pregnancy contrary to years 1968-1972 which resulted in increased proportion of primiparas in our groups as compared with a group analysed 29 years earlier.
3. The changed structure of the non-Romany born population (the increased occurrence of children from the risk groups in our set) could cause the lower basic anthropological parameter values of children born within 1991-1992.
4. The cause of the lower values in Romany and non-Romany fullterm newborns could be also the worse ecological situation in comparison with the status 20 years ago.

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