



## Characteristics of Adaptation Period for Extrauterine Life of Neonates from Multiple Pregnancies

M. Mikulska, B. Wolnicka

*Chair of Obstetrics and Gynaecology, Silesian Medical Academy, Bytom, Poland*

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### INTRODUCTION

Multiple pregnancies pose numerous threats both for foetuses and neonates. The following disorders are encountered among the most important perinatal disturbances: EPH – gestosis, immature labour and premature rupture of foetal membranes. Also during the labour, particularly the second one and the following ones, various lesions that may cause increased incidence of diseases and mortality in this group of neonates [5, 6, 10, 18, 21, 22, 25]. Complications encountered in neonates from multiple pregnancies, resulting both from abnormal conditions of intrauterine development and from perinatal pathology, require still wider studies, particularly within the context of intensified obstetrical care of women with multiple pregnancies [7, 11, 13, 16, 24].

### MATERIAL AND METHODOLOGY

In the years 1996-1998, out of 3883 neonates born in the Chair of Obstetrics and Gynaecology of the Silesian Medical Academy, 152 (3,9%) came from multiple pregnancies. This period included one case of quadruplets, eight cases of triplets and 62 twin pregnancies. Pregnant women were directed to our Chair within the program of multidisciplinary care of women with complicated pregnancies and they also came from the Department of Pathology of Pregnancy in our Chair. In 18 women, treated for infertility, the pregnancy was accomplished as a result of application of various techniques of assisted procreation. In one case – 4 foetuses were indicated, in five cases – three foetuses and in 12 cases – two foetuses.

Average age of mothers in the investigated group was  $27,6 \pm 5,7$  years. In most cases (56,3%) they were primiparae and the mean pregnancy time was  $35 \pm 3$  weeks, significantly ( $p < 0,001$ ) shorter than in the control group. Complications in the course of pregnancy, in the form of EPH-gestosis, imminent intrauterine infection, hepatic or renal failure and premature output of amniotic fluid and premature placental detachment were encountered in 63,2% of women, i.e. significantly ( $p < 0,001$ ) more frequently than in the control group.

Spontaneous labour took place in 22,5% cases and in 77,5% the pregnancy was terminated by means of caesarean section. This way of labour in the investigated group was significantly more frequent ( $p < 0,001$ ). The data are summarised in the Table 1.

Neonates from the investigated group were evaluated taking into account their condition in the 1<sup>st</sup> and 5<sup>th</sup> minutes after birth, their birth weight, time spent in the neonatal department and occurrence of complications during the adaptation period, such as respiratory insufficiency, intrauterine infection and hyperbilirubinaemia, depending upon sequence of birth.

The control group was composed of 100 randomly selected neonates, chosen during the whole period of the investigation, according to principles of random selection obligatory for research work. The obtained results in the investigated group and in the control

**Table 1 - General characteristics of mothers**

Group	Number of mothers	Age of mothers	Pregnancy		Labour			
			primi-para	multi-para	duration (weeks)	complications	spontaneous	caesarean section
Multiple pregnancies	71	27.6 ± 5.7	40 56.3%	31 43.7%	35 ± 3	45 63.4%	16 22.5%	55 77.5%
Control group	100	26.4 ± 5.5	44 44.0%	56 56.0%	38 ± 3	12 12.0%	75 75.0%	25 25.0%
<b>Comparison of groups</b>		<b>NS</b>	<b>NS</b>		<b>p&lt;0.001</b>	<b>p&lt;0.001</b>		<b>p&lt;0.001</b>

**Table 2 - General characteristics of investigated neonates**

Group	Number of neonates	Sex		Body weight (g)	State after birth [Apgar scale]					
		F	M		1 <sup>st</sup> minute			5 <sup>th</sup> minute		
					0-3	4-7	8-10	0-3	4-7	8-10
Multiple pregnancies	152	81 53.3%	81 46.7%	2100 ± 530	27 17.8%	66 43.4%	59 38.8%	17 11.2%	57 37.5%	78 51.3%
Control group	100	41 41.0%	59 59.0%	3100 ± 760	2 2.0%	20 20.0%	78 78.0%	2 2.0%	16 16.0%	82 82.0%
<b>Comparison of groups</b>		<b>NS</b>		<b>p&lt;0.001</b>		<b>p&lt;0.001</b>			<b>p&lt;0.001</b>	

group were subject to statistical analysis by means of programs EXCEL 5 and STATISTICA for WINDOWS, VERSION 4.3.

The results are presented in 5 tables and 2 figures which give average values and standard deviations, type of used statistical test and found level of statistical significance.

## RESULTS AND DISCUSSION

According to many authors, women with multiple pregnancy quite often give premature birth and the delivery of, particularly, the second and following foetuses was carried out most frequently by means of caesarean section [1, 3, 6, 8, 20, 21, 26]. Similarly, we have found out in our group that the time of pregnancy in the investigated group was significantly shorter than in the control group and the abdominal delivery was significantly more frequent than the normal labour.

In the result of the research carried out by us we have found out that neonates coming from multiple pregnancies have significantly ( $p < 0,001$ ) lower birth weight compared with the control group. This result was influenced predominantly by birth weight of neonates from triple and quadruple pregnancies. Among the examined neonates, only in the case of quadruplets we found a particular disproportion of the birth weight between the first and the fourth neonate (Table 2). Also Florjanski et al. [14], carrying out ultrasonographic evaluation of the body weight of twin foetuses, showed signifi-

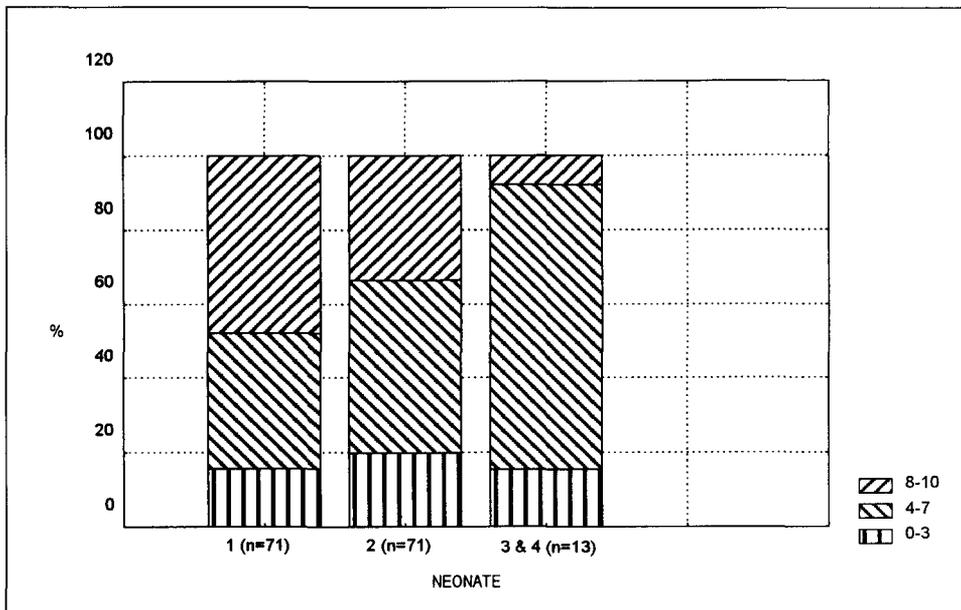
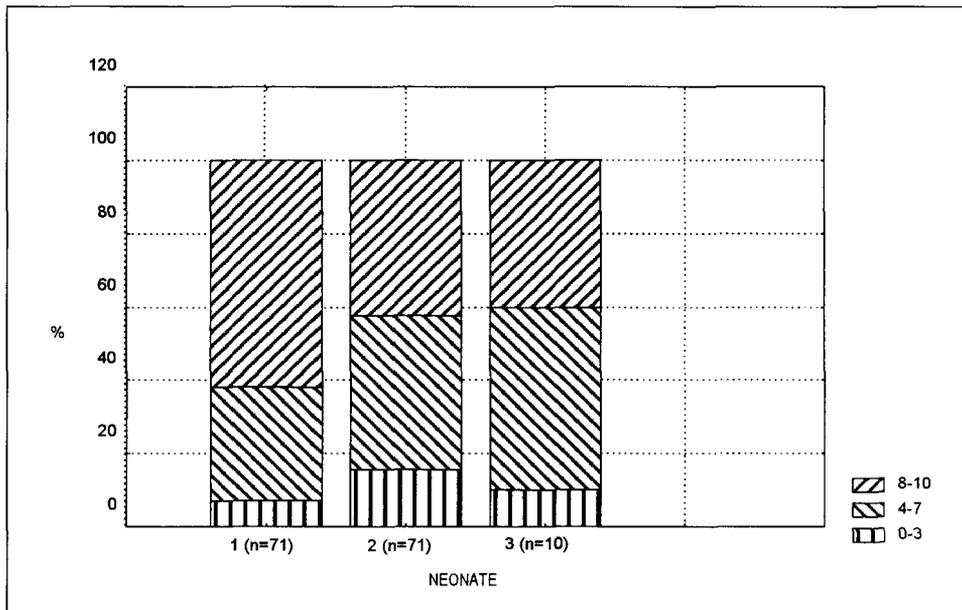


Fig. 1a - State of neonates (Apgar scale) in the first minute, taking into account succession of birth.



**Fig. 1b - State of neonates (Apgar scale) in the first minute, taking into account succession of birth.**

cantly lower dimensions of the head, chest and femoral bone in twins, compared with single foetuses. Other authors [2, 9, 10, 25] made similar observations.

Analysing the postnatal state of children from multiple pregnancies, various authors present various opinions, sometimes they suggest no significant difference with the control group [1, 3, 7, 22, 23, 25] or contrary – they suggest a danger of perinatal anoxia, particularly for the second foetus [6, 8, 15, 16, 27]. The state of neonates presented in our results, evaluated in Apgar scale in the 1<sup>st</sup> and 5<sup>th</sup> minutes after the birth was significantly ( $p < 0,001$ ) worse in comparison with the control group (Table 2).

The postnatal state of neonates, depending upon the sequence of births presented in figures 1a and 1b respectively. The neonate born as the first one, evaluated in the 1<sup>st</sup> minute was usually in good or average condition. The successive neonates were delivered more frequently in average or even in serious condition. These differences were statistically significant ( $p < 0,05$ ). A neonate born as the first one, evaluated after 5 minutes, was mostly in good or average state, also the state of successive neonates was mostly good. Similarly, other authors showed an increased risk of a low score in Apgar scale [6, 10, 12, 16, 19, 21].

Neonates from multiple pregnancies were significantly ( $p < 001$ ) more often prematurely born, in comparison with the control group and also number of days which they spent in the neonatal department was in their case significantly ( $p < 0,01$ ) bigger. Treatment of complications occurring in them was carried out as a rule in the neonatal department. The percentage of neonates directed to the intensive care unit was approximately the same as for those in the control group (Table 3).

**Table 3 - Clinical characteristics of investigated neonates**

Group	Number of neonates	Time of stay				
		prematu- rely born	born at term		in the department	trans- ferred
Multiple pregnancies	152	118 77.6%	34 22.4%	14 ± 6	125 82.2%	27 17.8%
Control group	100	23 23.0%	77 77.0%	8 ± 3	91 91.0%	9 9.0%
<b>Comparison of groups</b>		<b>p&lt;0.001</b>		<b>p&lt;0.001</b>	<b>NS</b>	

**Table 4 - Complications in adaptation period of investigated neonates**

Group	Number of neonates	Period of adaptation		Complications			
		without complica- tions	with complica- tions	Hyperbili- rubinaemia	Respiratory disturbances	Infections	Deaths
Multiple pregnancies	152	88 57.9%	64 42.1%	6 4.0%	33 21.7%	25 16.4%	1 0.7%
Control group	100	84 84.0%	16 16.0%	4 4.0%	4 4.0%	8 8.0%	1 1.0%
<b>Comparison of groups</b>		<b>p&lt;0.001</b>		<b>NS</b>	<b>p&lt;0.001</b>	<b>NS</b>	<b>NS</b>

**Table 5 - Complications in adaptation period of investigated neonates, taking into account succession of birth**

Group	Number of neonates	Period of adaptation		Complications			
		without complica- tions	with complica- tions	Hyperbili- rubinaemia	Respirato- rydistur- bances	Infections	Deaths
First neonate	71	45 63.4%	26 36.6%	4 5.6%	10 14.1%	12 16.9%	0 0.0%
Successive neonate	81	43 53.1%	38 46.9%	2 2.5%	23 28.4%	13 16.0%	1 1.2%
<b>Comparison of groups</b>		<b>NS</b>		<b>NS</b>	<b>p&lt;0.005</b>	<b>NS</b>	<b>NS</b>

In the course of adaptation of neonates born from multiple pregnancies, in comparison with the control group, complications were encountered significantly ( $p < 0,001$ ) more frequently. Among them, frequency of occurrence of both hyperbilirubinaemia and infections did not show any statistical significance whereas occurrence of respiratory disturbances in the investigated group was significantly ( $p < 0,01$ ) much higher (Table 4).

After analysis of occurrence of particular complications, depending upon sequence of birth, a significantly ( $p < 0,05$ ) more often occurrence of respiratory disturbances in successive neonates was shown in comparison with neonates born as the first ones (Table 5).

The presented results are convergent with the data received by other authors [5, 8, 9, 12, 15, 19, 20, 21, 26] who also observed a longer period of hospitalisation of neonates from multiple pregnancies, connected with the occurrence of such complications as respiratory distress syndrome and congenital infection and with a necessity of intensive care. Particularly exposed neonates, according to these authors, came from triple and quadruple pregnancies.

On the basis of our research, we think, like the other authors [8, 12, 13, 14, 19, 25], that multiple pregnancy requires particular diagnostics and individualisation of prenatal care. We believe also, as other authors do [9, 10, 15, 16, 20], that neonates from such pregnancies are particularly exposed to development of a severe form of diverse complications.

In our investigations, we observed a beneficial influence of breast-feeding – from the first hours of life – on the course of adaptation of neonates. However, we think, like Biancuzzo [4] and Liang et al. [17], that confirmation of these findings requires more detailed investigations.

## CONCLUSIONS

1. Neonates coming from multiple pregnancies are delivered prematurely significantly more frequently and show traits of a considerable immaturity.
2. Neonates coming from multiple pregnancies are delivered significantly more frequently with symptoms of perinatal anoxia, which is demonstrated particularly in successive neonates.
3. Neonates from multiple pregnancies show significantly more frequent complications during the adaptation period and particularly respiratory insufficiency, particularly visible in successive neonates.

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**Correspondence:** Monika Mikulska, Chair of Obstetrics and Gynaecology, Silesian Medical Academy 15, Batorego st., Bytom, Poland.