

Department of Hygiene, Medical University of Lublin

MAGDALENA KOWALSKA, ILONA OLEJARNIK,
GRZEGORZ BORZĘCKI, JOANNA KUSY, MAŁGORZATA KOWAL,
ANDRZEJ BORZĘCKI

*The course of pregnancy versus the state
of health of new-born babies with body weight of 1501–2000 g*

Knowledge of the causes of premature births has the influence on the lowering of their occurrences by means of adequate prevention. Both the course of pregnancy and the delivery have a decisive influence upon the state of health of a newborn and its further development. Also socio-economic factors and conditions as well as occurrences of diseases with pregnant women have a large influence on a child's development, beginning with the period of its foetal life. Diseases of pregnant women affect badly not only the course and time of pregnancy but also contribute to the occurrence of congenital defects, chronic diseases and disorders in parameters of physical development of children (6, 17).

The aim of this study was to analyse factors influencing the state of health of newborns with body weight of 1501–2000 g.

MATERIAL AND METHODS

The study was conducted in The Intensive NewBorn Care Unit of the Independent Public Clinic no. 4 in Lublin in the period from the 1st Jan. 2002 to 31st Dec. 2002. In the analysed period, 345 newborns were being hospitalised in this unit, which made up 14.5% of the total number of births. This number was 2,462 in this period.

Retrospective studies included 100 alive newborns with body mass 1501–2000 g, which made up 29% of all hospitalised patients in The Intensive NewBorn Care Unit. The research method was the analysis of medical documentation. Documentation concerning the course of pregnancy and the state of health of the studied children's mothers was also analysed in the research.

RESULTS

Most frequently, mothers of children born with body weight of 1501–2000 g were women at the age of 21–30 (62%) and at the age of 31–40 (23%). 12% of the studied mothers were at the age of 16–20 and only 3% were over 41 years of age. 60% of the studied women were living in the country and 40% in the city.

The majority of women had vocational education (38%) and secondary education (24%). Women with higher education made up 20% of the researched and women with primary education made up 18%. Most of the newborn babies were born from the first pregnancy (45%) and from the second pregnancy (22%). 18% of newborns were from the third pregnancy and 15% were from subsequent pregnancies. 47% of newborns with birth weight 1501–2000 g were given in the first minute of life 8–

10 points in the Apgar scale, 43% had 4–7 points and 10% were born in heavy asphyxia (0–3 points) (Tab. 1).

Table 1. Points in the Apgar scale of newborns with the weight of 1501–2000 g

Time from birth	1 st minute			3 rd minute		
	0–3	4–7	8–10	0–3	4–7	8–10
Points in Apgar scale						
N	10	43	47	5	16	79
%	10	45	47	5	16	79

Table 2. Pathological states occurring during pregnancies of mothers whose children were born with the weight of 1501–2000 g

Obstetric abnormalities	N	%	Chronic diseases	N	%
isthmocervical insufficiency	32	32	diabetes	15	15
bleeding during pregnancy	20	20	anaemia	10	10
hydramnios	8	8	thrombocytopenia	6	6
oligohydramnios	7	7	hypertension	21	21
			cardiovascular system diseases	5	5
			thyroid diseases	4	4
			epilepsy	4	4

Newborns born on time made up 52% and born prematurely – 58% of the total number of the studied children. Among obstetric diseases of pregnant women, isthmocervical insufficiency was the most frequently observed (32%) and also breeding during pregnancy of unknown etiology (20%). With 8% of pregnant women doctors observed hydramnios and with 7% – oligohydramnios. Pregnant mothers of the studied newborns were most often falling ill to hypertension (21%), diabetes (15%), anaemia (10%), thrombocytopenia (6%), diseases of the cardiovascular system (5%), epilepsy (4%) and diseases of thyroid (4%) (Tab. 2). 72% of mothers smoked cigarettes during pregnancy.

DISCUSSION

Premature birth and its consequences constitute the biggest problem in modern perinatology, despite a large progress in the development of diagnostic and therapeutic methods that has been achieved in recent years. The lowest index of premature births occurs in Holland – 3.5%. In Scandinavian countries it is between 3 and 6%, in the USA it amounts nearly to 6–8%, but the biggest index occurs in India – 35%. In Poland, frequency of premature births can be placed within 4.5–12% depending on the region of the country – on average it is 10%. (11) Premature births are the main cause of perinatal mortality and they make up 70–90% of all early deaths.

Perinatal medicine has a very important task to accomplish. Knowledge about and finding the causes of premature births has the influence on the lowering of their occurrences by means of adequate prevention. This is difficult because etiology of premature births is often complex and in many cases difficult to define. The conducted research made it possible to isolate factors that are risky for the fetus and the newborn. Researches of different authors indicate the correlation between a premature birth and socio-economic state, woman's diet during pregnancy, previous obstetrical failures, developmental defects of the uterus, bleeding during pregnancy and smoking cigarettes (6).

Social conditions have a big influence on a pregnant woman. They determine intrauterine development of the fetus (home conditions, work, income, prenatal medical care, free time). All abnormalities also negatively influence the fetus, causing mainly stoppage of its growth, prematurity and developmental defects resulting from transfer of individual features (7). Mother's age is an important parameter of evaluation of chances for normal development of pregnancy. Optimal age for having the first baby is between the 18th and 30th year of age. Earlier pregnancy, before 18, has a higher risk of miscarriage and premature birth. Then hypotrophic children are born more often. Women above 35 more often suffer from arterial hypertension during pregnancy. Older women more often deliver babies with developmental defects (8).

Woman's education, profession and performed job have an influence on the course of pregnancy. Women with lower education working physically have often difficult home and family conditions. In this group of women, danger of premature birth is twice higher than with women of higher education. Among the researched, as much as 38% have vocational education and 18% – primary education. Socio-economic state is closely connected with a woman's education and job. The greatest number of pregnancy abnormalities, premature births, intrauterine dead fetuses and newborns' deaths occurs with women of a low socio-economic status.

Also the number of pregnancies and the number of children have an essential influence on the present pregnancy. If previous pregnancies or births were not normal, it should be taken into account while leading the present pregnancy, e.g. the risk factor, which may recur. It is especially important for such complications as: premature birth, bleeding during pregnancy, placenta praevia, incorrect fetus position, and dead births. Wrong diet and using stimulants may also lead to complications during pregnancy. Insufficient amount of protein in the food of a pregnant woman seriously influences the low weight of new-borns and long-term consequences in the form of neurological and psychic disorders (7). Smoking cigarettes during pregnancy has a strong relationship with low birth weight and with damage to the placenta, as well as with an excessive number of natural abortions and perinatal deaths. There are also records of such complications as placenta praevia, premature detachment of the placenta, premature rupture of the membranes and birth occurring before 34th week. Children delivered by smoking mothers have bigger chances to be born "small, as for their date of birth". Low birth weight is related to increased newborns' mortality. New-borns delivered by smoking mothers are lighter than children of non-smoking mothers in particular periods of pregnancy and they have a higher risk of death. This is also confirmed by our own research showing that as much as 72% of mothers (to babies with birth weight 1501–2000) were smoking cigarettes during the whole period of pregnancy.

To the total picture of socio-economic conditions one should also add the care of the pregnant woman, especially in the first trimester, when it is essential to pay attention to hygiene, potential harmful factors and to quickly recognised abnormalities (7).

Among the mothers of the studied newborns, there occurred such diseases as arterial hypertension, diabetes, anaemia, epilepsy and diseases of thyroid. Both the disease itself and drugs taken by the pregnant women may have a negative influence on the fetus's development and on the state of health of the newborn. It is necessary to constantly control the course of pregnancy in order to determine the therapeutic procedure that would be optimal both for the mother and the developing fetus. Recently, one may have observed a growing interest in the interdependence between low weight birth and the development of arterial hypertension later in life (3, 5, 9, 10, 13, 14). Some researchers have also noted the interdependence between low birth weight and the occurrence of ischaemic heart disease, disorders in glucose tolerance and dyslipidaemia (1, 2, 4, 12, 15, 16). Arterial hypertension already existing before pregnancy, as well as causally related to pregnancy may also have an influence on the weight of the fetus.

Such pathologies as pre-eclamptic state, placenta praevia, premature detachment of the correctly placed placenta, haemolytic disease of the fetus, placental insufficiency, diseases of the urinary system, multiple pregnancy or hydramnios are often the cause of premature births. However, approximately 50% of premature births occur for so far unknown reasons, often without preceding symptoms of danger. At present it is claimed that the main cause of premature births are subclinical infections. Fetal membranes, whose durability is extremely important for the normal development of pregnancy, play an important role in the initiation of a premature birth. Premature rupture of the amniotic sac is, apart from idiopathic contraction activity, the next important cause of premature birth.

CONCLUSIONS

1. Obstetric abnormalities have an influence on the frequency of occurrence of premature births. The majority of pregnancy complications are caused by obstetric diseases – isthmocervical insufficiency, hypertension induced by pregnancy, premature birth, bleeding during pregnancy and premature outflow of amniotic fluid. The smallest number of complications occurs because of oligohydramnios and hydramnios.

2. Chronic diseases and smoking cigarettes by pregnant women influence negatively the development of the fetus and they increase the risk of premature births.

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SUMMARY

Premature birth and its consequences constitute a major problem in modern perinatology. The aim of this work was to show the correlation between the course of pregnancy and body mass of newborns and their state of health. The research included 100 newborns meeting these criteria. The greatest number of women delivering babies with birth rate of 1501–2000 g was in the age group between 21 and 30 years of age – 62%; 23% of mothers were in the age group between 31 and 40 years of age, 12% of women were in the group of 16–20 year-olds and the smallest group (3%) comprised of women between 41 and 48 years of age. In the researched group, 60% of women were living in the country and 40% were living in the city. 38% of women had vocational education, 24% had secondary education, 20% had university education and the lowest number of women was without profession, that is 18% of the researched. 45% of the newborns were born from first pregnancy, 22% from second pregnancy, 18% of the newborns were born from third pregnancy and 15% of the newborns were born from succeeding pregnancies. In the group of the researched new-borns, in the first minute of life 42% of newborns received from 8 to 10 points according to the Apgar scale, 38% received from 4 to 7 points and 10% from 0 to 3 points. In the third minute of life 79% of newborns received from 8 to 10 points, 16% received from 4 to 7 points and 5% from 0 to 3 points. It appears from the research that the greatest number of pregnancy complications is caused by obstetric diseases, that is as many as 136 cases of complications. In this group, complications are most frequently caused by isthmocervical insufficiency (23.9%), hypertension induced by pregnancy (22.5%) and premature birth (15.4%). From non-obstetric diseases, the most frequent causes of pregnancy complications were diabetes (28.8%), anaemia (19.2%) and thrombocytopenia (11.6%). The conducted research enabled to isolate medical and paramedical factors of higher risk for the foetus and the newborn. It also helped to define the influence of these factors on the state after birth, tendency to fall ill and disorders in further development of these children.

Przebieg ciąży a stan zdrowia noworodków o masie urodzeniowej 1501–2000 g

Celem pracy było ukazanie korelacji między przebiegiem ciąży, masą ciała noworodków oraz stanem ich zdrowia. Przeprowadzono analizę dokumentacji dotyczącej noworodków o masie 1501–2000 g. Badaniami objęto 100 noworodków spełniających te kryteria. Największa liczba kobiet rodzących dzieci o masie 1501–2000 g mieściła się w przedziale wiekowym 21–30 lat – 62%, w przedziale wiekowym 31–40 lat było 23% matek, 16–20 lat – 12% kobiet, najmniejszą liczbę stanowiły kobiety w wieku 41–48 lat – 3%. W grupie badanych mieszkankami wsi było 60% kobiet, natomiast 40% było mieszkankami miasta. 38% kobiet posiadało wykształcenie zawodowe, 24% – wykształcenie średnie, 20% – wykształcenie wyższe, a najmniejszą liczbę stanowiły kobiety bez zawodu, tj. 18% badanych. 45% noworodków było urodzonych z ciąży pierwszej, 22% z ciąży drugiej, 18% noworodków urodziło się z ciąży trzeciej, a 15% noworodków urodziło się z kolejnych ciąż. W grupie badanych

noworodków w pierwszej minucie życia 42% otrzymało od 8 do 10 punktów wg skali Apgar, 38% od 4 do 7 punktów, 10% od 0 do 3. W trzeciej minucie życia 8–10 punktów otrzymało 79% noworodków, 4–7 punktów 16%, a 5% 0–3 punktów. Z badań wynika, iż najwięcej powikłań ciąży powodują choroby położnicze, aż 136 przypadków powikłań. W tej grupie najczęściej powikłania powoduje niewydolność cieśniowo-szyjkowa (23,9%), nadciśnienie indukowane ciążą (22,5%), poród przedwczesny (15,4%). Z chorób niepołożniczych najczęstszą przyczyną powikłań ciąży była cukrzyca (28,8%), niedokrwistość (19,2%) i małopłytkowość (11,6%). Badania dały możliwość wyodrębnienia czynników medycznych i paramedycznych o zwiększonym ryzyku dla płodu i noworodka oraz ustalenia wpływu tych czynników na stan po urodzeniu, zachorowalność i zaburzenia w dalszym rozwoju dzieci.