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Wojewódzki Szpital Zespolony im. Jana Bożego w Lublinie
Oddział Położniczy, ordynator: dr med. Henryk Pakuła
Pracownia Radioimmunologiczna, kierownik:
prof. dr hab. Ewa Jagiełło-Wójtowicz

JERZY FRANCZAK, EWA JAGIEŁŁO-WÓJTOWICZ,
ROBERT ORZELSKI

The Serum Human Placental Lactogen in Pregnant Women Threatened by Preterm Delivery

Ludzki laktogen łożyskowy w surowicy krwi ciężarnych zagrożonych porodem przedwczesnym

Endocrinological examinations make it possible to evaluate the functions and relations of mother, fetus and placenta in modern obstetrics. They also help to evaluate the correct pregnancy advancement, to diagnose the case of prolonged gestation, serious congenital defects, fetal distress and intrauterine death.

Human placental lactogen (HPL) is structurally similar to human growth hormone (HGH); it influences protein, lipid and carbohydrate in the pregnant woman's body (5, 11). It also plays an important role in breast growth and preparation for lactation (7). In clinical practice there is a general opinion that the estimation of HPL in serum is a useful method of monitoring high risk pregnancy because of a good correlation with the placenta function and fetal condition (9). A positive correlation between the placenta weight and level of placental lactogen was noticed (11). Low values of HPL in pregnancy induced hypertension and IUGR were also observed (3, 9). The estimation of human placental lactogen monitoring in placenta function and fetal condition is very important especially in the late pregnancy (4, 8, 10). HPL values are in strict correlation with prolonged pregnancy; they become lower with placental deficiency (2). In late days of pregnancy the slow human placental

lactogen decrease was observed and its considerable decrease can be a signal of fetal distress (1). The estimation of placental lactogen in EPH gestosis is considered to be very important (2,5).

The aim of this study was to evaluate the initial HPL concentrations in pregnant women serum with threatened preterm delivery.

MATERIAL AND METHODS

80 pregnant women were admitted for hospital treatment because of threatened preterm delivery. The age of patients ranged from 18 to 37 years, the average was 26.3. The examined group included 37 primiparies and 43 multiparies; 17 had spontaeous abortions, 12 preterm labors, in 4 cases both abortion and preterm delivery occurred. There were 35 pregnant women from rural and 45 from urban areas. The advancement of pregnancy was determined on the basis of an interview, obstetrical examination and ultrasonography. Regular, painful contractions appearing not less frequently than one every 10 min felt by the pregnant woman and confirmed by cardiotocography were taken as a symptom of the preterm delivery. The control group included 75 healthy pregnant women coming to control examinations. For a more precise estimation and comparison of the results all the pregnant women were divided into 3 groups regarding the advancement of pregnancy group: I from 29th to 31st week, group II from 32nd to 34th and group III from 35th to 37th week of pregnancy. The blood for hormonal examination in the tested groups was obtained before medical treatment between 8 and 9 a.m. The tests were performed in Laboratory of Radioimmunoassay using commercial kit J^{125} HPL RIA kit produced by National FJC Research Institute for Radiobiology and Radiohygiene, Budapest, Hungary (code RK JC-30). The data were statistically analysed and shown in the table and figure. All results are expressed as means M +/− SD. The difference between means was tested using the Student's test for independent means. In all studies a significance level of $P<0.05$ was used.

RESULTS AND DISCUSSION

Analysing the material the increasing human placental lactogen amounts were observed in both examined groups, which was connected with the pregnancy advancement (Tab. 1). Similar observations were noticed by others, who reported the positive dependence of the examined hormone concentrations and the fetal and placenta mass

Tab. 1. Mean placental lactogen values [μg/ml] in threatened preterm delivery

Age pregnancy group	Examined group		Control group		P
	M	SD	M	SD	
29—31	2.7	1.21	3.1	1.1	>0.20
32—34	3.9	1.06	4.1	2.03	>0.70
35—37	5	1.45	4.9	1.64	>0.70

(6, 8). The highest increase of HPL values was observed between 24th and 28th week (6), and the top concentration was noticed two weeks before delivery (2); then, a slight decrease of placental lactogen was noted (6). In preterm delivery HPL levels were either low or decreasing (7).

In our examinations of pregnant women threatened by preterm delivery the amounts of human placental lactogen were lower between 29th, and 34th week in comparison with physiological pregnancy; whereas in the group of 35th to 37th week they were higher. The statistical analysis did not show any essential differences between both examined groups (Fig. 1).

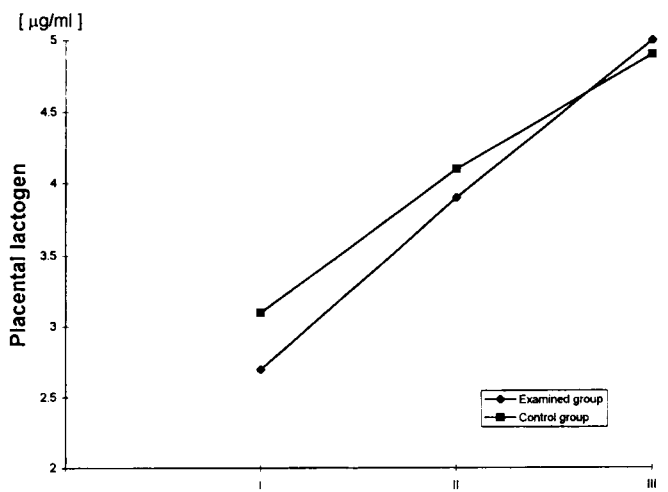

Fig. 1. Serum placental lactogen levels [μg/ml] in threatened preterm delivery

CONCLUSIONS

1. The serum HPL concentrations were lower from 29th to 34th and higher from 35th to 37th week of pregnancy threatened by preterm delivery.

2. On the basis of human placental lactogen examination it is difficult to evaluate the risk of preterm labor.

REFERENCES

1. Banaczek Z. et al.: Ocena przydatności oznaczania poziomu estriolu w moczu i laktogenu łożyskowego w surowicy krwi u ciężarnych z porodem przedwczesnym zagrażającym. Gin. Pol. 63 (8), 385—387, 1992.
2. Furuhashi N. et al.: Retrograde time scale analysis of human placental lactogen, beta chorionic gonadotropin and unconjugated estriol levels in human maternal serum from the onset of spontaneous labor. Gynecol. Obstet. Invest. 18, 264, 1984.
3. Hughes G. et al.: Tests of fetal wellbeing in the third trimester of pregnancy. Br. J. Obstet. Gynecol. 87, 650, 1980.
4. Johnson P. K. et al.: A rapid, flow through column ria for human chorionic somatomammotropin. Am. J. Obstet. Gynecol., 25, 1, 45, 1976.
5. Josimovich J. B. et al.: The role of lactogenic hormones in the pregnant woman and the fetus. Am. J. Obstet. Gynecol., 129, 777, 1977.
6. Kamińska J. A. et al.: Przydatność kliniczna oznaczania białek ciążowych w surowicy krwi. Gin. Pol., 52, 4, 381, 1981.
7. Klimek R. et al.: Diagnostyka i postępowanie w ciąży o wysokim ryzyku. PZWL 155, Warszawa 1983.
8. Letchworth A. T. et al.: A rapid semi automated method for the measurement of human chorionic somatomammotrophin. The J. Obstet. Gynecol. of Brit. Comm., 78, 542, 1971.
9. Mateeva E. et al.: Investigation of human placental lactogen, estriol, thyroid hormones and alfa feto proteins in various cases with premature delivery. Akus. i Ginekol., 4, 274, 1982.
10. Salem H. T. et al.: Measurement of placental protein 5, placental lactogen and pregnancy specific beta 1 glycoprotein in mid trimester as a predictor of outcome of pregnancy. Br. J. Obstet. Gynecol., 38, 371, 1981.
11. Skalba P.: Radioimmunologiczne oznaczanie poziomu somatotropiny kosmowkowej w surowicy krwi ciężarnych z ciążą prawidłową i powikłaną w ostatnich tygodniach jej trwania. Gin. Pol., 44, 9, 993, 1973.

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STRESZCZENIE

Metodą radioimmunologiczną oznaczano poziom ludzkiego laktogenu łożyskowego w surowicy krwi ciężarnych zagrożonych porodem przedwczesnym. Grupę badaną stanowiło 80 kobiet ciężarnych przyjętych do szpitala z powodu skurczów mięśnia macicy, do grupy kontrolnej zaliczono 75 zdrowych ciężarnych zgłaszających się celem badania kontrolnego do Poradni K. Celem dokładniejszej oceny i porównania wyników badań wszystkie ciężarne podzielono na 3 grupy wiekowe ciąży. W naszych badaniach u kobiet ciężarnych zagrożonych porodem przedwczesnym wartości HPL były niższe pomiędzy 29 i 34 tygodniem ciąży w porównaniu z grupą kontrolną, natomiast między 35 i 37 tygodniem poziom badanej substancji był wyższy. Przeprowadzona analiza statystyczna nie wykazała jednak istotności różnic między badanymi grupami. Wydaje się, że oznaczanie poziomu ludzkiego laktogenu łożyskowego może być pomocne w diagnostyce ciąży zagrożonej, łącznie z innymi metodami diagnostycznymi.