



A NOVEL PROGNOSTIC MODEL FOR PREECLAMPSIA

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The aim of this study is to provide prediction of preeclampsia through a novel integrated prognostic model

Materials and methods: A total of 120 gravid patients, with preexisting or newly discovered hypertension in pregnancy followed in the period 2008-2010. Data on risk factors were obtained at the first control at the Department. At every biochemical and biophysical parameters were followed: 24 hour blood pressure monitoring, D-dimers and in 32nd gestation week, an analysis of the resistance index of the Doppler of umbilical artery.

Outcome was defined as a group with and a group without preeclampsia. The integrated prognostic model was calculated by the method of determination of apriori and aposteriori risk. Statistical analyses were made by the use of the SPSS software.

Results: The examined population, was divided after delivery into 2 groups: a group with preeclampsia (N=51), and a group without preeclampsia. The integrated prognostic model comprised three steps: *first*, determination of apriori risk. From the risk factors that were significant at the univariate analysis, by the use of multivariate logistic regression, the following were determined as predictors of preeclampsia- age above 35 years and use of antihypertensive therapy (p=0,09 and p=0,032 respectively). The logistic regression is the basis of determination of the apriori risk of preeclampsia equals 3,95%. *The second step* in the model was logistic regression of biochemical parameters and determination of the likelihood ratio for preeclampsia that equal LR+=1,8 for the first, LR+=2 for the second and LR+=2,2 for the third trimester. *The third step* was determination of the log MoM for the blood pressure analysis and D-dimers, entered into logistic regression, and equalling LR+=1,3 for the first trimester, LR+=2,1 for the second trimester and LR+=2,3 for the third trimester. The aposteriori risk was obtained by multiplication of apriori risk by likelihood ratios.

Thus, aposteriori risks for the first trimester were 9,2 for the second trimester 16,6 and for the third trimester 19,9. The aposteriori model was able to predict preeclampsia correctly by 90% in the second trimester.

Prognostic model for preeclampsia in the second trimester:

Table 1: Step one, determination of risk factors by multivariate logistic regression; LR+=3.95

Multivariable logistic regression	B	S.E.	Wald	df	Significance	Exp(B)	95,0% C.I. for EXP(B)	
							Lower limit	Upper limit
Dual antihypertensive therapy	1,152	,538	4,579	1	,032	3,164	1,102	
Age 35-40 years	1,366	,520	6,900	1	,009	3,919	1,414	
Constant	-1,057	,253	17,416	1	,000	,347		

Table 2: Step two, multivariate logistic regression of biochemical parameters in the second trimester

	B	S.E.	Wald	df	Significance	Exp(B)	95,0% C.I. for EXP(B)	
							Lower limit	Upper limit
Urea	,695	,338	4,217	1	,040	2,004	1,032	
Serum albumin	-,209	,084	6,136	1	,013	,812	,688	
Cholesterol	,429	,154	7,781	1	,005	1,535	1,136	
Constant	2,444	3,322	,541	1	,462	11,515		

Table 3: Step three: Building the prognostic model for PE in the second trimester.

LR+ = 3,95 * 2 (LR+ for biochemical data) * 2,1 (LR+ for biophysical data)

LR+ =16,6

Conclusion

The integrated prognostic model offers possibilities for an apriori and aposteriori assessment of risk, thus correctly detecting 90% of patients with preeclampsia from the second trimester of pregnancy.

References:

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