

Placental growth factor levels relationship to clinical course and possible risk prediction of preeclampsia

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Objective

The aim of the study was to determine PIGF levels at the time of pregnancy termination due to preeclampsia (PE) within weeks 24-29, 30-33, 34-37, 38-41 and to verify the possibility to predict preeclampsia and relationship to its clinical course.

Methods

Control PIGF levels for weeks 9-19 were derived from 800 cases; 100 PE sera comprised: 17 - PE weeks 24-29, 24 (30-33), 34 (34-37) and 25 (38-41). PIGF was examined by Delphia Xpress (tm) platform (Perkin Elmer).

Results

Reliable PIGF control levels (3, 5, 25, 50, 75 and 95 percentiles) were established for weeks 9-19. For 1st trimester PE risk determination commercial software was used, for weeks 14-19 levels < 3 or 5 percentiles were applied. Inverse relationship of decreased PIGF levels to the onset of PE and its clinical impact was documented. PIGF median level increase during pregnancy is significantly retarded. Levels of PIGF for PE (weeks 24-29) correspond to medians of the 11th week, PE (weeks 30-33) to week 15 and intermediate/late PE to week 17. PIGF cut off levels for 100%/95% detection rate success for PE weeks 24-29, 30-33, 34-37, 38-41 are 61. 6/46. 2, 267. 8/19. 5, 262. 3/180. 3, 168. 3/146. 0 (all pg/ml) according to the highest PIGF levels for particular PE categories. Comparison of PE PIGF levels with control PIGF levels within weeks 20-40 (Saffer et al 2013) disclosed that significantly decreased PE levels less than 5th percentile are only in early PE (weeks 24-33). In PE weeks 34-37 and 38-41 the PIGF levels correspond to percentile 10 and 25 respectively. It indicates that in week 38-41 other pathogenetic factors than decreased PIGF are involved.

Conclusion

Combination of 1st trimester PE screening with software prediction of early intermediate and late PE with 2nd/3rd trimester PIGF examination could improve the complex care not only for PE, but also for other adverse risks associated with HELLP syndrome, SGA, preterm delivery and IUGR including increased efficacy of 1st trimester aneuploidy screening and PE prevention.

Table. PIGF in PE with pregnancy termination within 24th-41st weeks.

Pregnancy termination (wks)	24-29	30-33	34-37	38-41
Mean (pg/ml)	29.93	80.83	98.45	80.63
SD	15.96	65.75	60.21	48.63
Minimal level	11.40	14.30	14.60	10.00
Maximum level	61.60	267.80	262.30	214.70
Count	17	24	34	25