

Predictive values of ratio sFlt-1/PlGF for occurrence of early onset and late onset preeclampsia

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Objective

Preeclampsia is multisystem disorder of pregnancy, characterized by endothelial and placental dysfunction. It is classified as an early onset (which occurs < 34 weeks) and late onset (which occurs ≥ 34 weeks). There is an increase of level of antiangiogenic factor of soluble form similar to tyrosine kinase 1 (sFlt-1) and decrease of level of proangiogenic placental growth factor (PlGF) at preeclampsia. High ratio sFlt-1/PlGF is connected to occurrence of preeclampsia.

Methods

There was a study of the Clinic for Gynecology and Obstetrics of the University Clinical Center of Republic of Srpska (KGA UKC RS), which was implemented in period 01.01.2020. -31.12.2020. and which included 110 patients hospitalized at the department of Perinatology for suspected preeclampsia development, from 26⁺⁰ weeks of gestation until birth. One of the crucial criteria for inclusion of patient in the study was routine clinical use of ratio sFlt-1/PlGF as marker of preeclampsia occurrence. Patients included in the study were divided in two groups based upon gestational age: group 1 (<33⁺⁶ weeks) and group 2 (≥34 weeks). Also, patient-reported data for stated period in protocol book and appropriate data from Clinical Information System (KIS) were used for the purpose of this research.

Results

Calculated values for cut off 38 for group 1 are: NPV= 75%, PPV=73,7%, sensitivity=93,3%, specificity=37,5%, and for group 2 are: NPV= 90,4%, PPV=40%, sensitivity=73,7%, specificity=69,1%. For cut off 85 calculated values for group 1 are: NPV= 85,7%, PPV=87,5%, sensitivity=93,3%, specificity=75%, and for group 2 are: NPV= 86,8%, PPV=81,8%, sensitivity=47,4%, specificity=97,1%. For cut off 110 calculated values for group 1 are: NPV= 75%, PPV=86,7%, sensitivity=86,7%, specificity=75%, and for group 2 are: NPV= 85,9%, PPV=88,9%, sensitivity=42,1%, specificity=98,5%.

Conclusion

Determination of ratio sFlt-1/PlGF contributes in significant extent to timely diagnostic of preeclampsia and this impacts reducing the incidence of undesirable outcomes for mother and fetus.

Table 1. Data for cut off 38 for both groups of patients

Gestation			Preeclampsia		Total
			True	False	
< 34	sFlt1_PIGT1_gt38	True	14	5	19
		False	1	3	4
	Total		15	8	23
≥34	sFlt1_PIGT1_gt38	True	14	21	35
		False	5	47	52
	Total		19	68	87

Table 2. Calculated values for NPV, PPV, sensitivity and specificity for cut off 38 for both groups of patients.

<34NG	NPV=	0.750	PPV=	0.737	Sensitivity=	0.933	Specificity=	0.375
≥34NG	NPV=	0.904	PPV=	0.400	Sensitivity=	0.737	Specificity=	0.691

Table 3. Data for cut off 85 for both groups of patients.

Gestation			Preeclampsia		Total
			True	False	
< 34	sFlt1_PIGT1_gt85	True	14	2	16
		False	1	6	7
	Total		15	8	23
≥34	sFlt1_PIGT1_gt85	True	9	2	11
		False	10	66	76
	Total		19	68	87

Table 4. Calculated values for NPV, PPV, sensitivity and specificity for cut off 85 for both groups of patients.

<34NG	NPV=	0.857	PPV=	0.875	Sensitivity=	0.933	Specificity=	0.75
≥34NG	NPV=	0.868	PPV=	0.818	Sensitivity=	0.474	Specificity=	0.971

Table 5. Data for cut off 110 for both groups of patients.

Gestation			Preeclampsia		Total
			True	False	
< 34	sFlt1_PIGT1_gt110	True	13	2	15
		False	2	6	8
	Total		15	8	23
≥34	sFlt1_PIGT1_gt110	True	8	1	9
		False	11	67	78
	Total		19	68	87

Table 6. Calculated values for NPV, PPV, sensitivity and specificity for cut off 110 for both groups of patients.

<34NG	NPV=	0.750	PPV=	0.867	Sensitivity=	0.867	Specificity=	0.75
≥34NG	NPV=	0.859	PPV=	0.889	Sensitivity=	0.421	Specificity=	0.985