Association between sFlt-1/PlGF ratio and incidence of maternal-fetal and neonatal complications.

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Objective

To review the **incidence of maternal-fetal and neonatal complications** in pregnant women with **Preeclampsia** depending on **sFlt-1/PlGF ratio**.

Methods

A **retrospective** observational study was carried out in our Maternal-fetal Medicine Department at the tertiary University Hospital Parc Taulí in single pregnant women with **diagnosis of Preeclampsia, between January 2018 and December 2022**.

Patients were classified according to the **maximum sFlt-1/PlGF ratio** value determined during the gestation in **low** (<38), **intermediate** (between 38–85 if <34 weeks and 38–110 if ≥34 weeks), **high** (between 85-110 if <34 weeks and 110-201 if ≥34 weeks) and **very high** ratio (>655 if < 34 weeks and >201 if ≥ 34 weeks). **Maternal-fetal complication** was defined as the presence of either Intrauterine Growth Restriction (IUGR), stillborn, placental abruption, HELPP syndrome, severe hypertension (as hypertension that required two or more drugs), eclampsia, acute pulmonary edema, acute myocardial infarction, disseminated intravascular coagulation or admission to maternal critical care unit. **Neonatal complication** was defined as the presence of either neonatal sepsis, bronchopulmonary dysplasia, retinopathy, enterocolitis, leukomalacia, periventricular haemorrhage, neonatal death or admission to neonatal critical care unit.

Results

From a total of **297 patients** with diagnosis of **preeclampsia**, **144** had at least one **sFlt-1/PlGF ratio determination** and were **included**. Mean age was 33.7 ±6.55 (mean±SD) years old and mean BMI was 27.5 ±6.79 Kg/m2. 85 patients (59%) were nulliparous and 123 (85%) got pregnant spontaneously. With regard to the majority human race, 63% were white and 21% South-American. Regarding established preeclampsia risk factors, 45 women (**47%**) presented **high risk first trimester preeclampsia** screening, 28 patients (**19%**) had already had **previous preeclampsia**, 28 (**19%**) had **arterial hypertension** prior to gestation, only 16 (11%) of them smoked, 15 (15%) had pathological uterine arteries at first trimester and 22 (28%) at the second trimester. Mean gestational age of **diagnosis** of preeclampsia was **34.8±3.56 weeks**. 40 women (**28%**) developed **early Preeclampsia** and 60 (**42.1%**) developed **severe Preeclampsia**. Mean gestational age at **delivery** was **35.7±2.12 weeks**, with an **induction rate of 80%** (115) and delivery by **caesarean section in 36%** (55) of them.

Maternal-fetal complications

SFlt/PlGF ratio	Absolute numbers	Total	Risk (%)	Relative risk	IC 95%
Low	9	28	**32.14**	1	
Intermediate	13	41	**31.71**	0.986	0.489-1.988
High	23	44	**52.27**	1.626	0.886-2.986
Very high	23	31	**74.19**	2.31	1.296-4.109
Total	68	144	47.22		**p=0.0002**

Neonatal complications

SFlt/PlGF ratio	Absolute numbers	Total	Risk (%)	Relative risk	IC 95%
Low	4	28	**14.29**	1	
Intermediate	5	41	**12.2**	0.854	0.251-2.903
High	16	44	**36.36**	2.545	0.948-6.836
Very high	25	31	**80.64**	5.65	2.242-14.215
Total	50	144	34.72		**p=0.0000**

The **incidence of maternal-fetal complications** was **significantly higher** in pregnancies with **Preeclampsia and high or very high sFlt-1/PlGF ratio (p=0.0002).** The **incidence of neonatal complications** was also **significantly higher** in pregnancies with **Preeclampsia and high or very high sFlt-1/PlGF ratio (p=0.0000).**

A **statistically significant rise in caesarean section rate as sFlt-1/PlGF ratio increased** was also observed **(p=0.0318),** from a 28.57% of caesarean delivery in women with low ratio to 51.61% in women with very high ratio. In other words, women with Preeclampsia and a **very high sFlt-1/PlGF ratio** had **1.8 times more risk** to end up in a caesarean section.

Conclusion

Higher values of placental angiogenic factors (sFlt-1/PlGF) are associated with **higher incidence of maternal-fetal and neonatal complications** and a higher rate of **caesarean section**. Therefore, sFlt-1/PlGF ratio is a reliable tool to **predict the occurrence of complications** in pregnant women with Preeclampsia.