



Role of sFlt-1/PlGF ratio in predicting clinical outcome in pre-eclampsia

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OBJECTIVE:

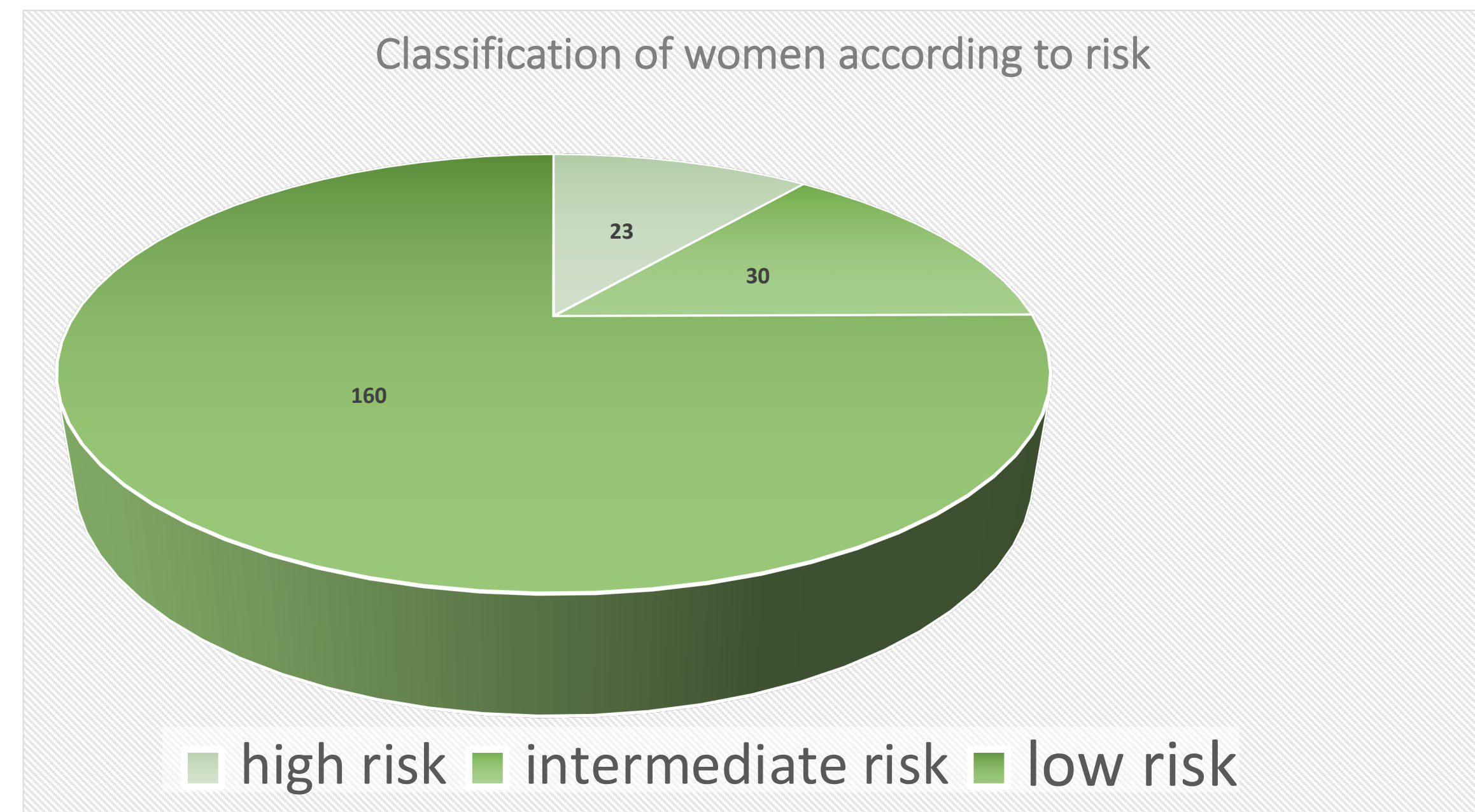
Preeclampsia is characterised by abnormally low Placental Growth factor (PlGF), a protein involved in placental angiogenesis and increase in soluble FMS-like tyrosin kinase-1 (sFlt-1), which disable PlGF. sFlt-1/PlGF ratio is widely used to predict preeclampsia. The objective of this study is to test the role of sFlt-1/PlGF ratio test in predicting adverse fetal outcomes and its impact on maternal antenatal and neonatal admissions, in the **context of a district hospital with resource constraints**.

DESIGN:

This is a prospective observational study on all pregnant mothers who had the ratio test to predict preeclampsia. They were classified as low-risk (<38), intermediate-risk (39-85) and high-risk (>85). Analysis was performed on impact on antenatal admissions, inappropriate discharge, adverse fetal events and neonatal admission.

METHOD:

The study included consecutive pregnant mothers between 20+0/40 and 36+6/40 who had Elecsys sFlt-1/PlGF ratio test during January to June 2021. Participants were identified from maternity triage test results register in two hospital sites and cross-checked with laboratory data. Clinical information was obtained from Euroking and maternity records. The final data was analysed using Excel spreadsheet.



RESULTS:

Demographics:

- Of the 213 women included in the study, majority 160 (75%) were low-risk (<38), 30(14%) were intermediate-risk (39-85) and 23(11%) were high-risk (>86).
- More than half (56.8%) of high risk , 47.2% of intermediate risk and 31.3% low risk result were primigravida. The mean BMI among high risk was 34.7, for intermediate risk was 28.9 and among low risk was 27.1.
- 39.1% (9 of 23) of high risk, 43.3% (13 of 30) of intermediate risk and 33.8% (54 of 160) low risk ladies had associated comorbidities

Outcome:

- Majority of the women with high-risk result 65% (15 out of 23), and 36% (11/30) of women with intermediate risk needed antenatal admissions to control high BP, whereas only 14% (22 out of 160) of those with low-risk result were admitted to monitor blood pressure.
- All admissions in the high-risk category were appropriate, whereas nearly half; 45% (10 out of 22) of the low-risk and 18% (2 out of 11) of the intermediate-risk women had unnecessary /avoidable admission.
- Majority of the high-risk group developed clinical preeclampsia (73.3%;11 /15) with a mean time of 16.7 days from high-risk result.
- Only 27.3% (6 out of 22) of low risk, and 36.4% (4 of 11) of intermediate risk results developed preeclampsia with mean time from test to development of pre-eclampsia being 27.3 days .
- Still birth rate was 12/1000 in high-risk group ; 3 pregnancies were complicated with still birth. 2 had high-risk results (98 and 732) in the second trimester at 29+ weeks and 27+ weeks related to uteroplacental insufficiency. The one still birth with low-risk result (13) was related to multiple congenital anomalies and hence excluded from final analysis.
- NICU admission rate was 4.3 times in the high-risk (52%) versus 12% in low-risk group, 82.1% of NICU admission related to iatrogenic prematurity.

CONCLUSIONS:

- The findings of this preliminary prospective study suggest that sFlt-1/PlGF ratio is a useful marker not only to predict preeclampsia but also to predict adverse maternal, fetal and neonatal outcome in women with high-risk result.
- For majority of our women, it was a reassuring test by ruling out preeclampsia when the test result was low; allowing these women to be managed in outpatient setting. There is a huge potential to use this test to avoid unnecessary antenatal admissions in this low-risk group especially in the background of Covid pandemic and resource constraints.
- In those with high-risk result, we have observed increased rate of maternal admissions, development of preeclampsia within 2 weeks , neonatal admissions and still birth rate. Hence a high-risk result should trigger risk assessment, counselling regarding risks and extra maternal and fetal surveillance for uteroplacental insufficiency and preparation for delivery.
- NICE guidelines recommends use of PLGF ratio test to predict preeclampsia from 20- 34+6 weeks. Our study provide preliminary evidence for clinical utility of extending the use of this test upto 36+6 weeks gestation.

REFERENCES: *Hypertension in pregnancy: diagnosis and management. NICE guideline. Published: 25 June 2019.* www.nice.org.uk/guidance/ng133