An initial experience with the first trimester combined screening for pre-eclampsia using FMF algorithm

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Introduction

- Incidence of Pre-eclampsia : 2-3%.
- Major cause of Maternal / Perinatal morbidity & mortality
- Aspirin use in screen Positive women reduces preterm pre-eclampsia :ASPRE Study

Changes in our practice

- NICE risk based screening till Feb 2020
- Since 2018, Aspirin dose changed to 150mgs.
- FMF risk based screening from 2020 Feb

Screening methods

	NICE 2019	ACOG 2018
High-risk factors	Previous PE Chronic HTN Autoimmune disease DM CKD	Previous PE Chronic HTN SLE DM CKD Multifetal gestation Thrombophilia
Moderate-risk factors	Nulliparity Age>40years BMI>35 FH PE Multifetal gestation Pregnancy interval >10 years	Nulliparity Age>35 years Pregnancy interval >10 years BMI>30 FH PE Hx SGA/adverse outcome
Indication of Aspirin	1 high or >1 moderate	1 high, consider >1 moderate
Aspirin dose	75-150 mg from 12 weeks	81mg before 16 weeks
Aspirin duration	Daily at bed time till delivery	Daily till delivery

Aim

- To evaluate the impact of FMF model for pre-eclampsia screening in our practice

Materials and Methods

- Study Design –Retrospective review
- Study Place – Seethapathy clinic & Hospital
- Study Period – Feb 2020 - Aug 2021
- All eligible singleton women were counselled for PE screening.
- Screening done as per FMF model
- They were compared with NICE risk based screening done in 2018
- Analysis was done by simple statistical methods

FMF model

- Multimodal screening
- Singleton pregnancies 11+0 – 13+6weeks.
- Maternal characteristics, MAP, UtA- PI, PAPP-A, PlGF.
- Risk ≥ 1:100 for Preterm PE is considered as high risk.

Results

1213 women screened for PE based on FMF model Feb 2020 – Aug 2021

1349 screened for PE based on NICE risk factor Jan 2018 – Dec 2018

998 delivered so far
57 were lost to follow up

Study population
N - 941

	NICE (N – 1349)	FMF (N – 941)
Screen positive rate	118 (8.7%)	129 (13%)

Pre-eclampsia	FMF	NICE	OR (95% CI)	P-value
Incidence of PE	11(1.16%) N - 941	44 (3.3%) N- 1349	0.35 (0.18-0.68)	0.002
False Negatives	6(0.73%) N-812	28(2.3%) N- 1231	0.32 (0.13-0.78)	0.01

Variable	N	SP	SPR	SN	SNR	P-value (CI)
IUGR	35	13	37%	22	63%	0.0001 (1.97 – 8.21) OR – 4.02

941 Pregnancies
11 developed PE

FMF : 129 screen positives
5 developed PE

NICE : 58 screen positives
1 developed PE

112 (86.8%) positive by FMF only
4 developed PE
2- Term PE
2- Preterm PE

17 screen positive by FMF and NICE
1 developed Preterm PE

41(70.6%) positive by NICE only
NOT ON ASPIRIN
NO PE

Discussion

- Incidence of PE is 1.1%, of which preterm PE incidence is 0.8%
- Screen positive rate by NICE method was 8.7% and FMF method was 13% in our study
- 10% SPR in SPREE study
- In the group screened positive by FMF, despite aspirin had higher IUGR compared to screen negative women, though they did not develop PE. Therefore these women needs serial monitoring of fetal growth.
- 70% of women screened positive by NICE , negative by FMF, no PE occurred.

In our practice , the incidence of PE was reduced by 65% and false negatives were reduced by 68% by using FMF based screening.

Conclusion

- Effective and feasible screening method
- First trimester PE screening by the FMF model identifies a different subgroup of women compared to NICE.
- FMF model plus aspirin is more effective in preventing pre- eclampsia in our population

Limitations

- Compliance is not documented
- Part of ongoing study

References

1. *Performance of the FMF First-Trimester Preeclampsia-Screening Algorithm in a High-Risk Population in The Netherlands Eva F. Zwertbroek et al, Fetal Diagn Ther 2021;48:103–111*
2. *Comparison of diagnostic accuracy of early screening for pre-eclampsa by NICE guidelines and a method combining maternal factors and biomarkers: results of SPREE. Tan M.Y et al, Ultrasound Obstet Gynecol 2017,51: 743-750*
3. *ASPRE trial: performance of screening for preterm pre-eclampsia D.L. Rolnik et al., UOG 2017*

The continued use of maternal risk factor based pre-eclampsia screening in routine healthcare settings must be re-evaluated