DIAGNOSTIC ACCURACY OF NEUTROPHIL- LYMPHOCYTE RATIO IN PREDICTION OF PREECLAMPSIA

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INTRODUCTION

Preeclampsia refers to the new onset of hypertension and proteinuria or hypertension and end organ dysfunction with or without proteinuria after 20 weeks of gestation in previously normotensive women. It is a unique vascular disease with an incidence of 3-5%. It causes adverse pregnancy outcomes proteinuria, oedema, multiple organ failure,foetal growth restriction and even intrauterine death.

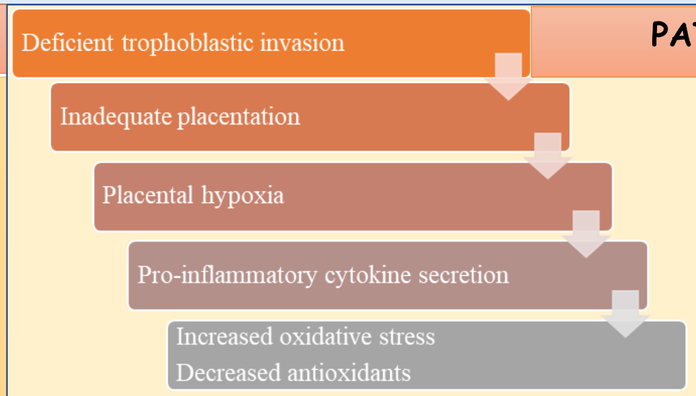
OBJECTIVE

To study the role of Neutrophil to Lymphocyte ratio as predictor and as marker of severity in women with pre-eclampsia.

STUDY TYPE

Prospective cohort study

PATHOGENESIS



Hyper activation of inflammatory and immunological responses in pre-eclampsia causes a marked increase in neutrophil count and modulation of neutrophil count towards greater production of superoxide compared with nitric oxide, which results in endothelial damage and dysfunction leading to hypertension.

METHODS

Study was carried out over a period of 11 months after informed consent and ethical clearance.

Total 320 pregnant women were recruited and 20 women were lost to follow up due to prevailing COVID-19 scenario, so 300 pregnant women were followed upto 6 weeks after delivery.

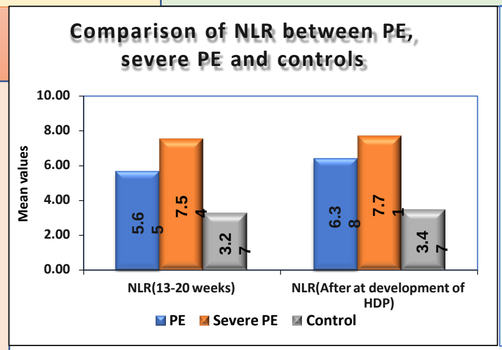
Out of 66 women, who developed hypertension,2 were excluded because of pregnancy complications like intrauterine fetal death. Thus ,study comprised of total 138 subjects, group 1 (severe preeclampsia)- 32 cases and group 2(non severe preeclampsia)- 32 cases and 74 healthy normotensive pregnant women who were controls.

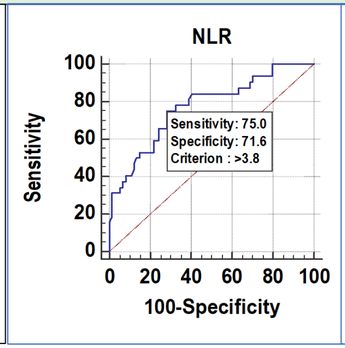
5ml of venous blood sample is collected in EDTA vacutainer from pregnant women. Samples were collected twice, first during the enrollment and second after development of disease (group 1and 2) and healthy normotensive pregnant women controls were taken after systematic randomization from those who did not develop pre-eclampsia during follow up period.

Absolute neutrophil count, Absolute lymphocyte count were obtained by an automated analyzer- SYSMEX XN 1000, done in Department of Pathology, AIIMS RAIPUR, and NLR was calculated from the same.

DATA ANALYSIS AND RESULTS

Women who developed preeclampsia during follow up (group 1 and 2) had higher neutrophil to lymphocyte ratio(NLR) than the healthy pregnant women at early gestation. The receiver operating curve showed significant diagnostic accuracy of NLR between controls and non severe PE cases (area under the curve [AUC] =0.772, p<0.0001) at cutoff value of >3.8, 75% sensitivity and 71.62% specificity. It also showed significant diagnostic accuracy (AUC = 0.637, p<0.0116) between non severe and severe PE, at a cutoff value of > 4.0 with a sensitivity of 93.75% and specificity of 37.5%.





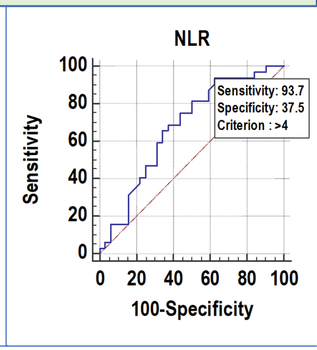


Figure 1(on left):-Comparison of NLR between PE, severe PE and controls.

Figure 2 and 3 (on right) :Receiver operating characteristic curve of NLR for predicting non severe pre-eclampsia and severe pre- eclampsia respectively.

CONCLUSION

Maternal NLR could be considered as a predictor of PE and alternative marker in the evaluation of the severity of PE. NLR is an inexpensive laboratory marker for clinical prediction and disease severity evaluation of preeclampsia.

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