

# DISTINCT PROINFLAMMATORY MARKERS IN GESTATIONAL HYPERTENSION AND PRECLAMPSIA: A PROSPECTIVE STUDY



## Introduction

- Hypertensive disorders of pregnancy (HDP) have an underlying mechanism of endothelial dysfunction & elevated immune response
- Neutrophil-lymphocyte ratio (NLR) has acceptable sensitivity & specificity of 74% & 64% respectively for diagnosis of PE  
*Zheng et al, Nov 2019, Medicine*
- There is conflicting evidence regarding predictive role of NLR and platelet-lymphocyte ratio (PLR) ratio for HDP

## Objective

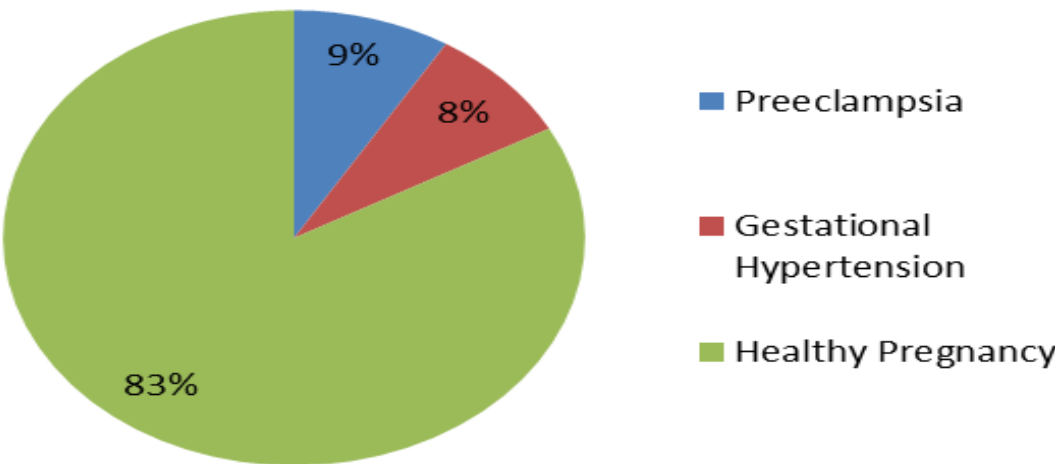
- To compare first trimester leucocyte indices and their ratios between gestational hypertension and preeclampsia
- To correlate these inflammatory markers in first trimester with development of hypertension later in gestation

## Methods

- Study design:** Prospective Observational study
- Study Settings:** Department of Obstetrics & Gynaecology, AIIMS, New Delhi
- Sample population:** 578 Women with singleton pregnancy (12-14 weeks)
- Study period:** September 2018 – February 2021

## Results

Incidence of Hypertensive Disorders in pregnancy in study population



## Baseline Characteristics

Parameter	Healthy (n=351)	GH (n=30)	PE (n=37)	P value*
Age (in years)	27.85±4.0	28.53±4.1	28.03±3.7	0.693
Primigravida	139 (40%)	11 (37%)	16 (44%)	0.520
Abortion	51 (14%)	6 (20%)	2 (5%)	
Parous	161 (46%)	30 (43%)	19 (51%)	
BMI (kg/m <sup>2</sup> )	24.27±3.9	28.44±5.1	26.56±6.1	<0.001
Systolic BP(mmHg)	109.4±11.4	117.6±11.1	120.70±12.0	<0.001
Diastolic BP (mm Hg)	70.53±9.7	77.60±11.2	77.54±9.5	<0.001
Haemoglobin (gm/dl)	11.49±1.1	11.53±1.0	11.46±1.3	0.985

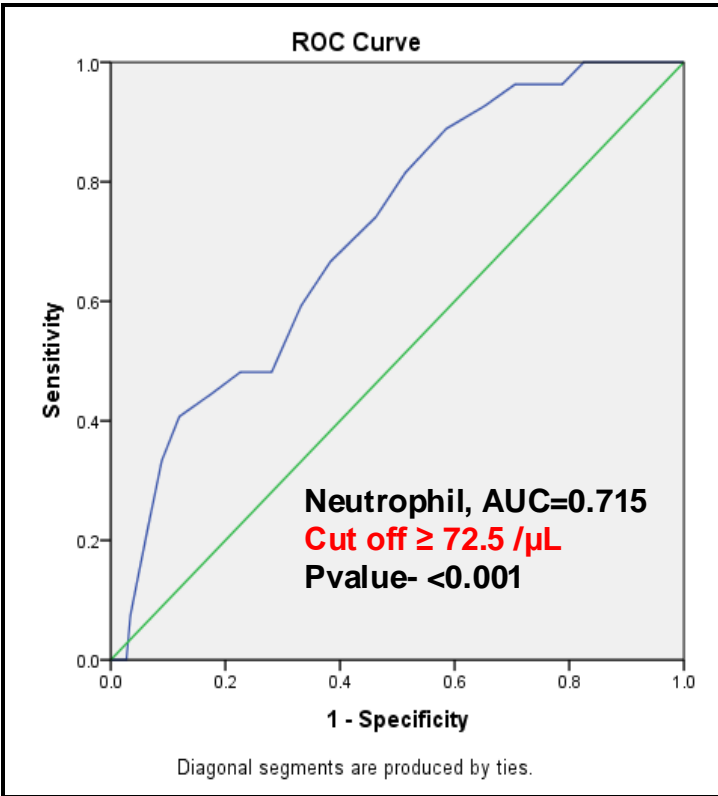
## Systemic Pro-inflammatory Markers

Parameters	Healthy (n=351)	GH (n=30)	PE (n=37)	P value
Total Leucocyte Count (/μL)	8.91* ±2.1	<b>10.18*±2.9</b>	9.34 ±2.4	0.016
Neutrophils (/μL)	69.68 ±9.9	<b>74.96±4.5</b>	71.06± 5.8	0.017
Lymphocytes (/μL)	20.83 ± 6.1	<b>17.48 ±3.6</b>	20.9 ± 4.4	0.018
Neutrophil Lymphocyte Ratio	3.73* ±1.7	<b>4.52* ±1.1</b>	3.62 ±1.1	0.049
Platelet Lymphocyte Ratio	11.05*± 5.6	<b>13.66* ±4.5</b>	11.10 ±4.2	0.060

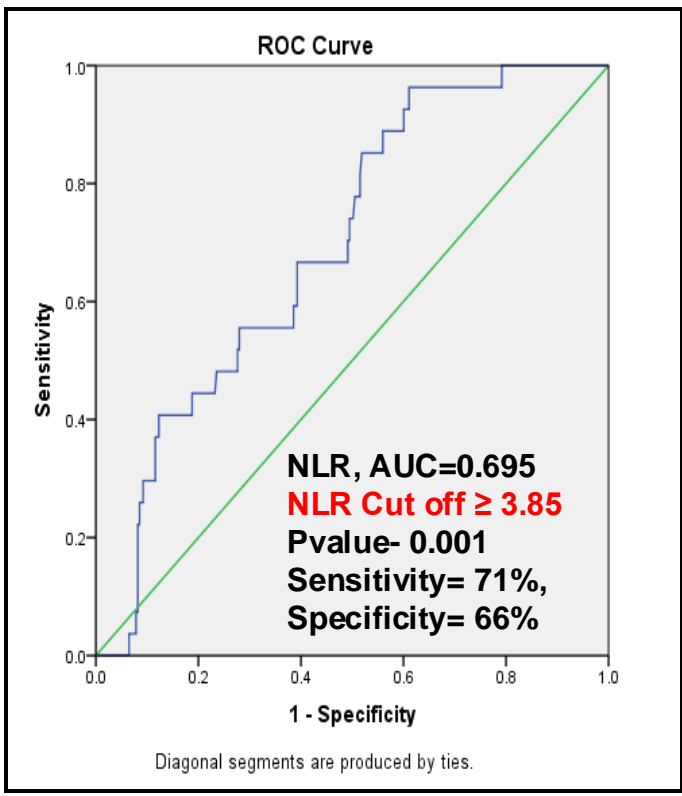
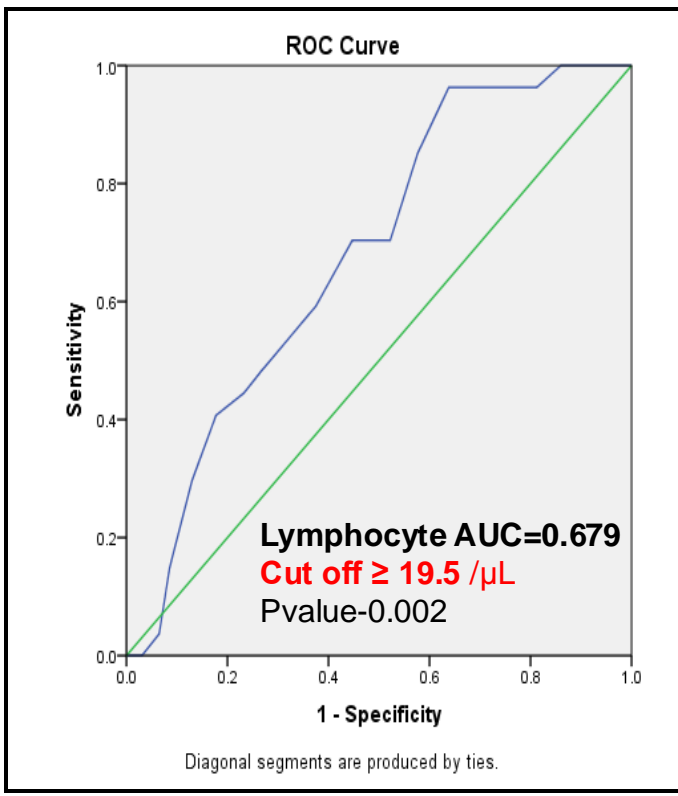
## Conclusion

- At First Trimester (12-14wks) there is differential response of inflammatory markers in NT and HDP
- There is exaggerated inflammatory response at first trimester in women destined to develop GH later in pregnancy
- The study suggests GH has an inflammatory etiology similar to essential HTN, unlike PE which has angiogenic basis (PE has a non inflammatory basis and develops in otherwise healthy women).

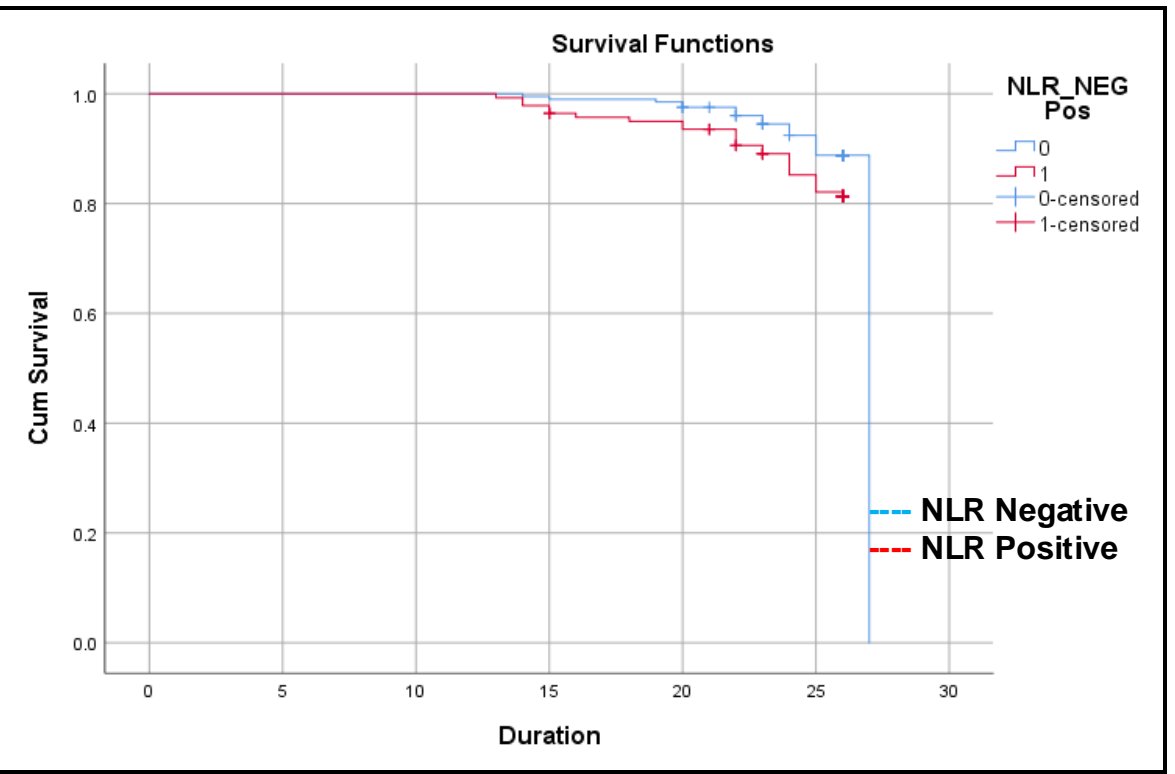
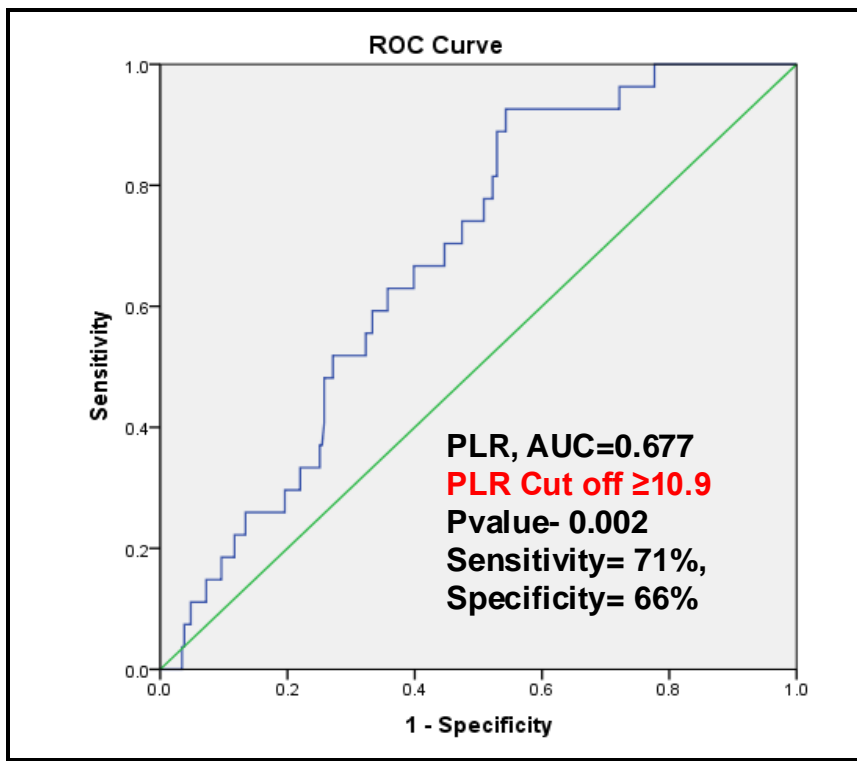
## ROC in predicting GH in comparison with other groups based on Neutrophil, Lymphocyte, NLR and PLR



Sensitivity= 68%, Specificity= 61%



## Kaplan Meyer survival curve between HDP and HP



The difference in survival probable is statistically significance i.e. (0.047)

## References

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