

Maternal Serum Cell Free Fetal DNA As a Predictor of The Severity of Preeclampsia in Egyptian Females

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INTRODUCTION:

Prediction and diagnosis of preeclampsia (PE) are challenging due to nonspecific signs like proteinuria and hypertension, especially in women with preexisting conditions. There is a need for noninvasive methods to identify women at risk for PE early in pregnancy, allowing for prophylactic therapy and close followup to reduce fetal and maternal morbidity and mortality. Evaluating biomarkers for PE is crucial.

OBJECTIVES:

To assess circulating maternal serum cellfree fetal DNA levels and their relation to PE severity in Egyptian women

Methodology:

This prospective cohort study was conducted on 167 Egyptian pregnant women aged 18-35 years between 20-40 gestational weeks with preeclampsia at Beni_suef University Hospital and MUST University Hospital. Verbal informed consents was taken from patients agreeing to participate in the study. Ethical approval was obtained from the ethical committee at Beni_suef University Maternity hospital Laboratory work was done in MUST university laboratory in the period from September 2022 to July 2024.The following findings were recorded Platelets, Liver and Kidney functions and serum cell free fetal DNA level by RFLP_PCR. These patients were divided into two groups: mild preeclampsia (n=103) group and severe preeclampsia (n=64) group

CONCLUSIONS:

In pregnant women with preeclampsia, maternal serum level of cell free fetal DNA positively correlated with systolic and diastolic blood pressure, creatinine and proteinuria and can significantly predict severity of preeclampsia at cut-off >422 with 90.62% sensitivity, 94.17% specificity, 90.6% PPV and 94.2% NPV.

RESULT:

		Mild preeclampsia (n=103)	Sever preeclampsia (n=64)	P value
Platelets (10 ³ /microliter)	Mean ± SD	254.46 ± 73.08	117.06 ± 58.87	<0.001*
	Range	97 - 367	97 - 364	
Creatinine (mg/dL)	Mean ± SD	0.5 ± 0.14	1.32 ± 0.12	<0.001*
	Range	0.3 - 0.7	1.2 - 1.7	
Proteinuria (mg)	Mean ± SD	397.08 ± 59.03	766.78 ± 62.01	<0.001*
	Range	296 - 496	658 - 870	
Urea (mg/dL)	Mean ± SD	16.44 ± 3.49	16.08 ± 3.51	0.520
	Range	11 - 23	11 - 23	
ALT (U/L)	Mean ± SD	26.42 ± 15.38	70.25 ± 18.34	<0.001*
	Range	9 - 79	9 - 79	
AST (U/L)	Mean ± SD	20.33 ± 7.52	19.58 ± 8.22	0.545
	Range	9 - 34	9 - 34	

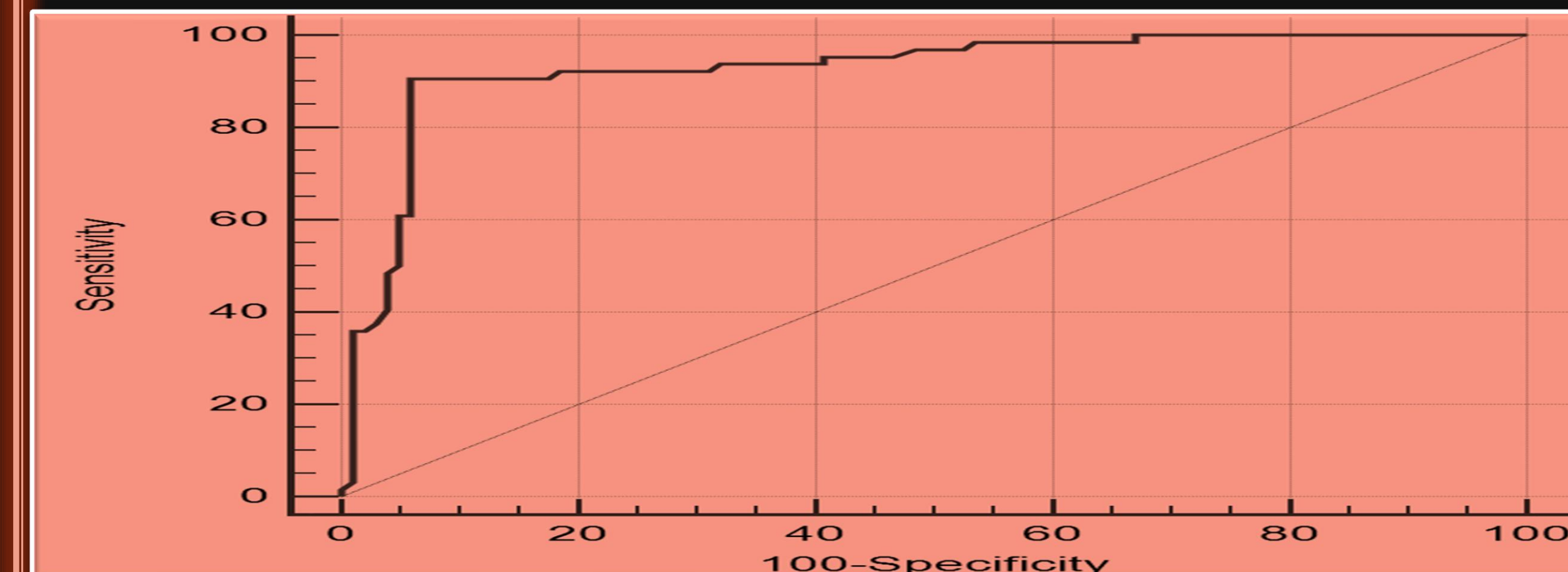


Figure 1 Table 1: Role of maternal serum CFFDNA in prediction PE severity

Cut-off	Sensitivity	Specificity	PPV	NPV	AUC	P value
>422	90.62%	94.17%	90.6%	94.2%	0.929	<0.001*

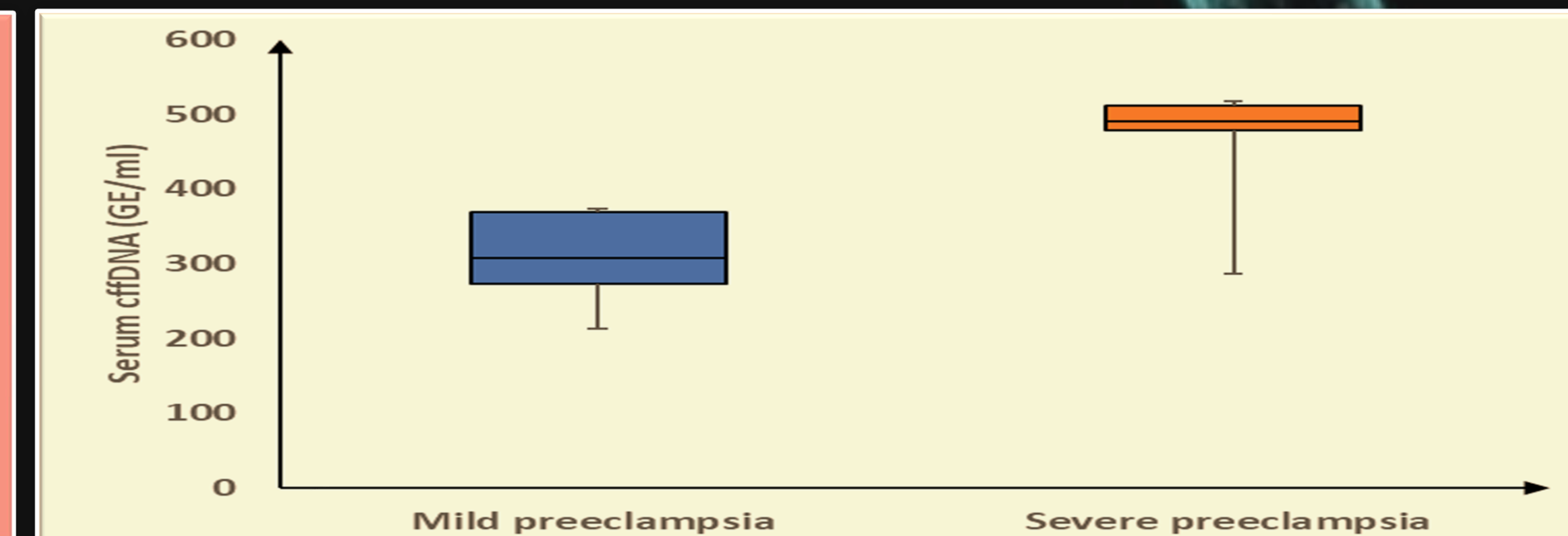


Figure 2 table 2 : Serum cffDNA of the studied groups

Serum cffDNA (GE/ml)	Mild preeclampsia (n=103)	Sever preeclampsia (n=64)	P value
Median	308	491.5	<0.001*
IQR	273 - 369.5	478.75 - 512	

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