RESULTS

The results of the present study were summarized, statistically analyzed and presented in 13 tables and 11 figures.

Table 1: Mean, S.D., and range of age (years) in the studied groups.

Age (years)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	21.0 – 32.0	35.0 – 40.0	19.0 - 35.0	17.0 – 34.0	18.0 – 31.0	19.0 – 31.0
Mean value	24.4	37.5	24.7	25.1	25.8	25.0
S.D.	2.9	1.7	4.8	5.3	4.1	4.2
t. versus normotensive non-pregnant group p		14.9 <0.001	0.14 > 0.05	0.38 > 0.05	1.1 > 0.05	0.4 > 0.05
t. versus hypertensive non-pregnant group P			- 9.7 <0.001	- 8.6 <0.001	- 10.1 <0.001	- 10.8 <0.001
t. versus preeclamptic group. P				0.21 > 0.05	0.73 > 0.05	0.2 > 0.05
t. versus normotensive pregnant group (1st trimester). P					0.45 > 0.05	- 0.04 > 0.05
t. versus normotensive pregnant group (2nd trimester). P						0.6 > 0.05

Table 1 shows the mean values of age among the studied groups. Non-pregnant patients with hypertension had statistically significantly higher mean age compared to other groups ($p<0.001$).However, there is no statistically significant difference between other groups (normotensive non-pregnant, preeclampsia, normotensive pregnant in the first, second and third trimesters of pregnancy) regarding the mean age ($p>0.05$).

Table 2: Mean, S.D., and range of parity in the studied groups.

Parity (n)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	1.0 – 3.0	3.0 – 7.0	0.0 – 4.0	0.0 – 4.0	0.0 – 3.0	0.0 – 3.0
Mean value	2.0	4.66	0.8	1.26	1.33	1.27
S.D.	0.65	1.23	1.14	1.53	1.13	1.12
t. versus normotensive non-pregnant group **p**		7.39 <0.001	- 3.5 <0.01	- 1.7 > 0.05	- 2.57 <0.05	- 2.04 0.05
t. versus hypertensive non-pregnant group **P**			- 8.8 <0.01	- 6.68 <0.001	- 8.2 <0.001	- 7.57 <0.001
t. versus preeclamptic group. **P**				- 0.94 > 0.05	- 0.8 > 0.05	1.1 > 0.05
t. versus normotensive pregnant group (1st trimester). **P**					- 0.27 > 0.05	0.0 > 0.05
t. versus normotensive pregnant group (2nd trimester). **P**						0.31 > 0.05

Table 2 shows the mean parity among the studied groups. Non-pregnant patients with hypertension had statistically significantly higher mean parity compared with other groups ($p<0.001$). Patients with preeclampsia had the lowest parity compared to other groups which is statistically significant in comparison with normotensive non-pregnant women ($p<0.001$), however it is not statistically significant in comparison to pregnant women with normal blood pressure at different gestational ages ($p> 0.05$).

Table 3: Mean, S.D., and range of systolic blood pressure (mmHg) in the studied groups.

Systolic blood pressure (mmHg)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	100.0 – 120.0	140.0 – 165.0	145.0 – 190.0	95.0 – 120.0	90.0 – 120.0	95.0 – 120.0
Mean value	114.0	153.6	162.7	111.0	110.0	108.0
S.D.	7.36	8.33	13.47	8.70	9.81	8.54
t. versus normotensive non-pregnant group **p**		13.8 <0.001	12.27 <0.001	- 1.019 > 0.05	- 1.26 > 0.05	- 1.83 > 0.05
t. versus hypertensive non-pregnant group **P**			2.19 <0.05	- 13.71 <0.001	- 13.12 <0.001	- 14.59 <0.001
t. versus preeclamptic group. **P**				- 12.47 <0.001	- 12.23 <0.001	- 13.1 <0.001
t. versus normotensive pregnant group (1st trimester). **P**					- 0.295 > 0.05	- 0.74 > 0.05
t. versus normotensive pregnant group (2nd trimester). **P**						- 0.39 > 0.05

Table 3 shows the mean systolic blood pressure among the studied groups. Preeclamptic patients had the highest mean systolic blood pressure which is statistically significant compared with normotensive non-pregnant women, pregnant women with normal blood pressure at different gestational ages ($p<0.001$) and non-pregnant women with hypertension ($p<0.05$).

Table 4: Mean, S.D., and range of diastolic blood pressure (mmHg) in the studied groups.

Diastolic blood pressure (mmHg)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	60.0 – 80.0	90.0 – 105.0	90.0 – 115.0	60.0 – 80.0	60.0 – 80.0	60.0 – 80.0
Mean value	70.66	95.0	104.66	70.66	70.67	70.33
S.D.	7.98	5.0	8.12	7.28	7.76	6.39
t. versus normotensive non-pregnant group p		10.0 <0.001	11.56 <0.001	0.0 > 0.05	0.0 > 0.05	- 0.126 > 0.05
t. versus hypertensive non-pregnant group P			3.92 <0.001	- 10.66 <0.001	- 10.21 <0.001	- 11.76 <0.001
t. versus preeclamptic group. P				- 12.1 <0.001	- 11.72 <0.001	- 12.86 <0.001
t. versus normotensive pregnant group (1st trimester). P					0.0 > 0.05	- 0.133 > 0.05
t. versus normotensive pregnant group (2nd trimester). P						-.0128 > 0.05

Table 4 shows the mean diastolic blood pressure among the studied groups. Preeclamptic patients had the highest mean diastolic blood pressure which is statistically significant compared with all other groups ($p<0.001$). Also, the mean diastolic blood pressure in non-pregnant women with hypertension was statistically significantly higher compared with normotensive non-pregnant women, and pregnant women with normal blood pressure at different gestational ages ($p<0.001$).

Table 5: Mean, S.D., and range of adrenomedullin (pg /ml) in the studied groups.

Adrenomedullin (pg/ml)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	21.0 - 47.0	109.0 – 197.0	227.0 – 389.0	34.0 – 82.0	97.0 – 184.0	200.0 – 264.0
Mean value	32.9	153.8	302.1	53.4	139.8	232.6
S.D.	8.7	31.4	46.0	17.3	20.9	17.2
t. versus normotensive non-pregnant group p		14.3 <0.001	22.2 <0.001	4.1 <0.001	18.2 <0.001	40.1 <0.001
t. versus hypertensive non-pregnant group P			10.3 <0.001	- 10.83 <0.001	- 1.43 > 0.05	8.521 <0.001
t. versus preeclamptic group. P				- 19.6 <0.001	- 12.4 <0.001	- 5.4 <0.001
t. versus normotensive pregnant group (1st trimester). P					12.3 <0.001	28.5 <0.001
t. versus normotensive pregnant group (2nd trimester). P						13.3 0.001

Table 5 shows the mean values of plasma adrenomedullin levels among the studied groups. Preeclamptic patients had the highest mean plasma adrenomedullin levels compared with all other groups which is statistically significant ($p < 0.001$). Non-pregnant women with hypertension had statistically significantly higher plasma adrenomedullin levels compared with normotensive non-pregnant women and pregnant women with normal blood pressure at first trimester ($p<0.001$). However, plasma adrenomedullin levels in pregnant women with normal blood pressure at different gestational ages (first, second and third trimester) were statistically significantly higher than those detected in non-pregnant normotensive women ($p<0.001$).Also, plasma adrenomedullin levels in pregnant women with normal blood pressure at third trimester were significantly higher compared with Non-pregnant women with hypertension. Moreover, plasma adrenomedullin levels were significantly increased with increasing gestational age in pregnant women with normal blood pressure ($p<0.001$).

Table 6: Mean, S.D., and range of proteinuria (g/dl) in the studied groups.

Peoteinuria (g/dl)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	0.13 – 0.17	0.11 – 0.25	0.30 – 2.90	0.13 – 0.25	0.10 – 0.21	0.12 – 0.21
Mean value	0.15	0.167	1.47	0.17	0.154	0158
S.D.	1.17	4.265	1.125	3.543	3.419	2.562
t. versus normotensive non-pregnant group p		1.46 > 0.05	4.55 <0.001	1.52 > 0.05	0.414 > 0.05	1.05 > 0.05
t. versus hypertensive non-pregnant group P			4.492 <0.001	0.512 > 0.05	- 0.912 > 0.05	- 0.706 > 0.05
t. versus preeclamptic group. P				- 4.468 <0.001	- 4.537 <0.001	- 4.525 <0.001
t. versus normotensive pregnant group (1st trimester). P					1.589 > 0.05	- 1.45 > 0.05
t. versus normotensive pregnant group (2nd trimester). P						0.344 > 0.05

Table 6 shows the mean values of proteinuria among the studied groups. Significant proteinuria was observed only in patients with preeclampsia (1.47±1.125, $p<0.001$).

Table 7: Mean, S.D., and range of gestational age (weeks) in the studied groups.

Gestational age (weeks)	Normotensive non-pregnant group (n = 15)	Hypertensive non-pregnant group (n = 15)	Preeclampsia group (n = 15)	Normotensive pregnant group		
				1st trimester (n = 15)	2nd trimester (n = 15)	3rd trimester (n = 15)
Range	---	---	28.0 - 38	6.0 – 12.0	14.0 – 25.0	28.0 – 39.0
Mean value	---	---	34.0	9.4	18.9	33.5
S.D.	---	---	3.207	1.681	3.473	3.852

Table 7 shows the mean values of gestational age among patients with preeclampsia and pregnant women with normal blood pressure at different gestational ages (first, second and third trimester).

Table 8: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in normotensive non-pregnant group.

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	P
Age (years)	0.203	0.469
Parity (n)	0.391	0.150
Systolic blood pressure (mmHg)	0.115	0.683
Diastolic blood pressure (mmHg)	0.176	0.530
Proteinuria (g/dl)	- 0.022	0.939

Correlation is significant at the 0.05 level (2-tailed).

Table 8 shows that there was no significant correlation between plasma adrenomedullin levels and the parameters in non-pregnant women with normal blood pressure.

Table 9: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in hypertensive non-pregnant group.

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	P
Age (years)	- 0.003	0.991
Parity (n)	- 0.020	0.943
Systolic blood pressure (mmHg)	0.740	0.002*
Diastolic blood pressure (mmHg)	0.675	0.006*
Proteinuria (g/dl)	0.260	0.350

* Correlation is significant at the 0.01 level (2-tailed).

Table 9 shows that there was a significant positive correlation between plasma adrenomedullin levels and both systolic and diastolic blood pressure (r = 0.740, p = 0.002 and r = 0.675. p = 0.006 respectively) in non-pregnant women with hypertension.

Table 10: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in preeclampsia group.

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	P
Age (years)	- 0.121	0.667
Parity (n)	- 0.152	0.589
Gestational age (weeks)	- 0.019	0.946
Systolic blood pressure (mmHg)	0.551	0.033*
Diastolic blood pressure (mmHg)	0.529	0.043*
Proteinuria (g/dl)	0.678	0.005**
Severity of preeclampsia	0.643	0.01**

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 10 shows that there was a significant positive correlation between plasma adrenomedullin levels and systolic blood pressure, diastolic blood pressure, severity of preeclampsia and proteinuria ($p<0.05$, $p<0.05$, $p<0.01$ and $p = 0.01$ respectively) in pregnant patients with preeclampsia.

Table 11: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in normotensive pregnant group (1st trimester).

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	**P**
Age (years)	0.406	0.133
Parity (n)	0.102	0.717
Gestational age (weeks)	- 0.101	0.720
Systolic blood pressure (mmHg)	- 0.119	0.673
Diastolic blood pressure (mmHg)	- 0.014	0.959
Proteinuria (g/dl)	0.049	0.864

Correlation is significant at the 0.01 level (2-tailed).

Table 11 shows that there was no significant correlation between plasma adrenomedullin levels and the parameters in pregnant women in the first trimester with normal blood pressure.

Table 12: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in normotensive pregnant group (2nd trimester).

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	**P**
Age (years)	0.176	0.631
Parity (n)	0.053	0.852
Gestational age (weeks)	0.027	0.923
Systolic blood pressure (mmHg)	0.279	0.314
Diastolic blood pressure (mmHg)	0.170	0.546
Proteinuria (g/dl)	- 0.325	0.238

Correlation is significant at the 0.01 level (2-tailed).

Table 12 shows that there was no significant correlation between plasma adrenomedullin levels and the parameters in pregnant women in the second trimester with normal blood pressure.

Table 13: Correlation between plasma adrenomedullin levels (pg/ml) and other parameters in normotensive pregnant group (3rd trimester).

Parameters	Plasma adrenomedullin levels (pg/ml)	
	Correlation coefficient (r)	P
Age (years)	0.354	0.195
Parity (n)	0.056	0.842
Gestational age (weeks)	- 0.163	0.561
Systolic blood pressure (mmHg)	- 0.213	0.446
Diastolic blood pressure (mmHg)	- 0.330	0.229
Proteinuria (g/dl)	- 0.049	0.863

Correlation is significant at the 0.01 level (2-tailed).

Table 13 shows that there was no significant correlation between plasma adrenomedullin levels and the parameters in pregnant women in the third trimester with normal blood pressure.

Fig.1: Correlation between plasma adrenomedullin levels (pg/ml) and gestational age in normotensive pregnant women (first, second and third trimesters).

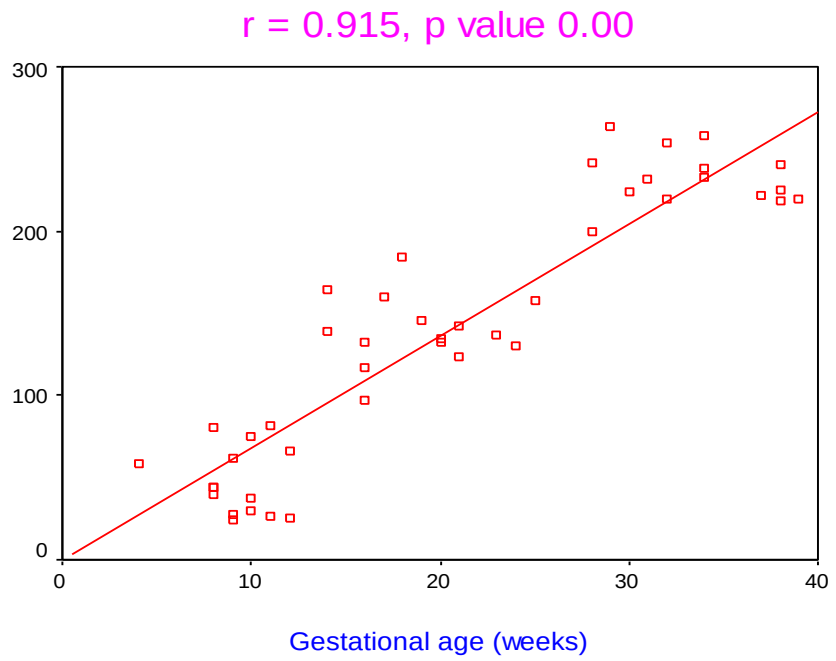


Fig. 1 shows a significant positive correlation between plasma adrenomedullin levels and increasing gestational age in normotensive pregnant women at different gestational ages (first, second, and third trimester), (correlation coefficient = 0.915 , P<0.001).

Fig.2: Correlation between plasma adrenomedullin levels (pg/ml) and gestational age in preeclamptic patients.

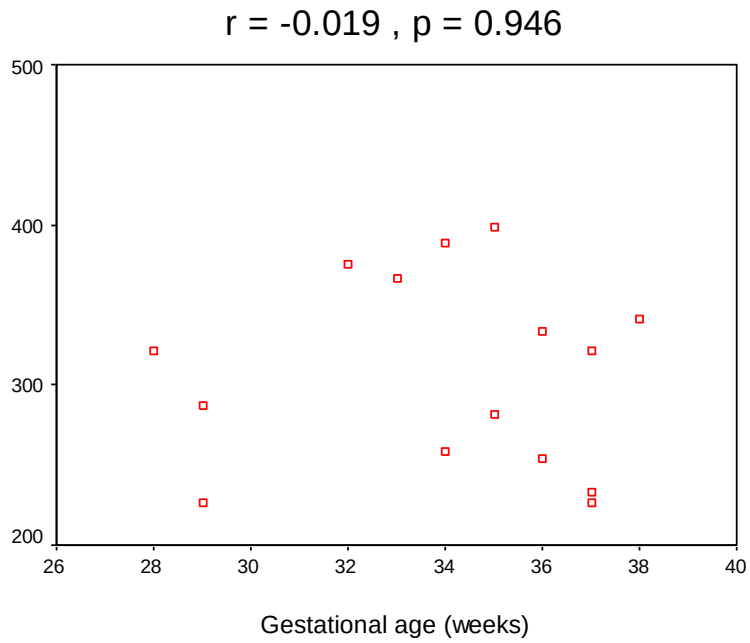


Fig. 2 shows that there was no significant correlation between plasma adrenomedullin levels and gestational age in pregnant patients with preeclampsia, (correlation coefficient = - 0.019 , P = 0.946).

Fig. 3: Correlation between plasma adrenomedullin level (pg/ml)and proteinuria in preeclampsia group.

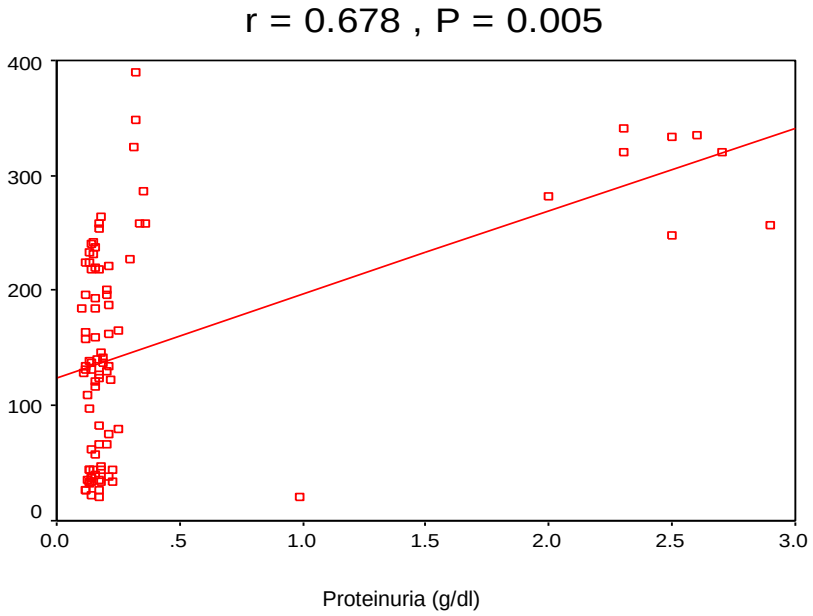


Fig. 3 shows a significant positive correlation between plasma adrenomedullin level and proteinuria in preeclamptic patients (correlation coefficient = 0.678 , P<0.01).

Fig.4: Correlation between plasma adrenomedullin levels (pg/ml) and systolic blood pressure (mmHg) in preeclamptic patients.

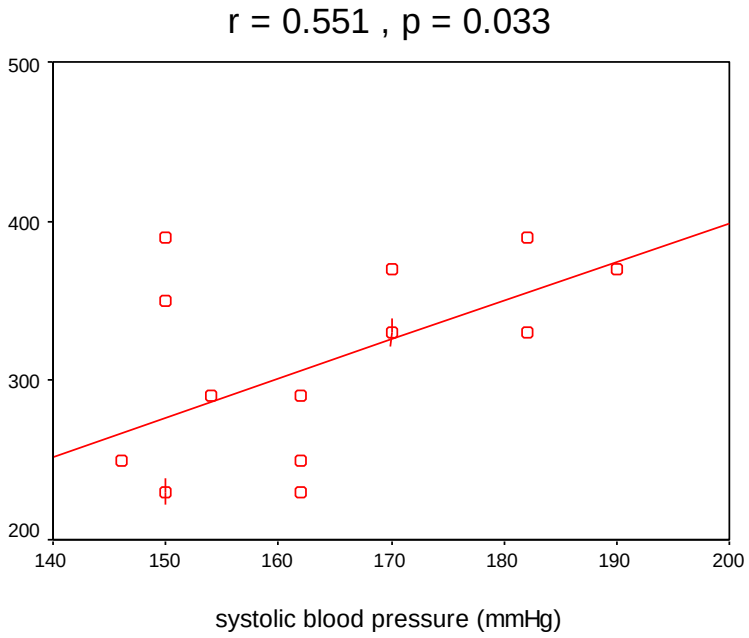


Fig. 4 shows a significant positive correlation between plasma adrenomedullin level and systolic blood pressure in preeclamptic patients (correlation coefficient = 0.551 ,p = 0.033).

Fig.5: Correlation between plasma adrenomedullin levels (pg/ml) and diastolic blood pressure (mmHg) in preeclamptic patients.

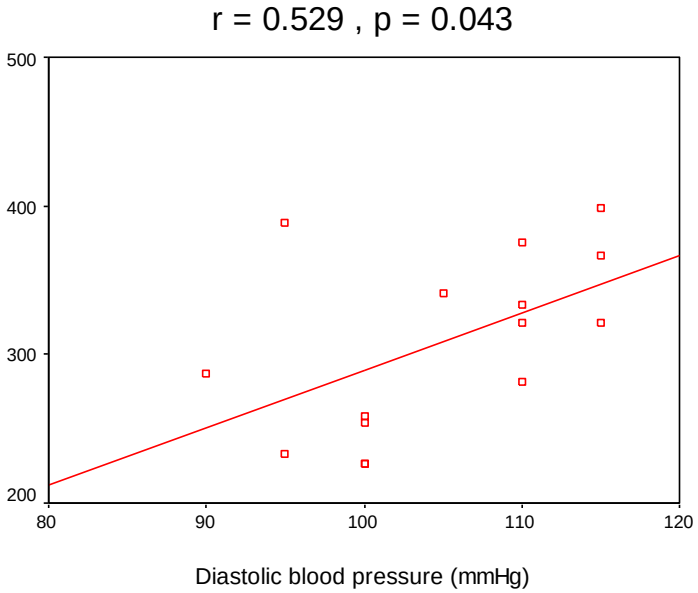


Fig. 5 shows a significant positive correlation between plasma adrenomedullin level and diastolic blood pressure in preeclamptic patients (correlation coefficient = 0.529, p = 0.043).

Fig.6: Correlation between plasma adrenomedullin levels (pg/ml) and severity of preeclampsia in preeclamptic patients.

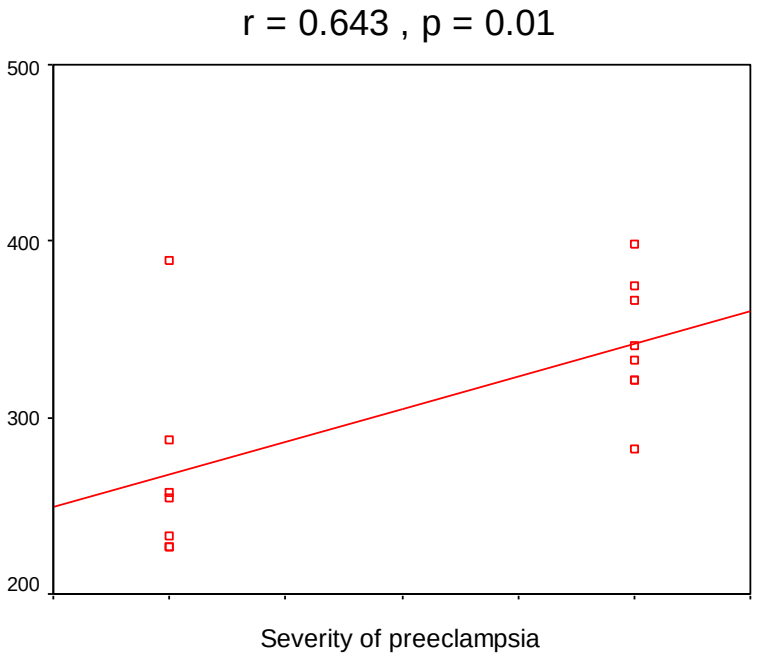
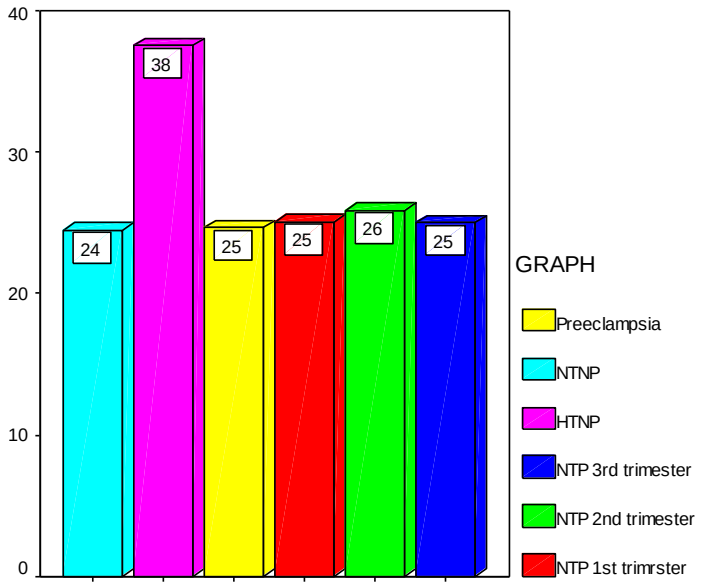


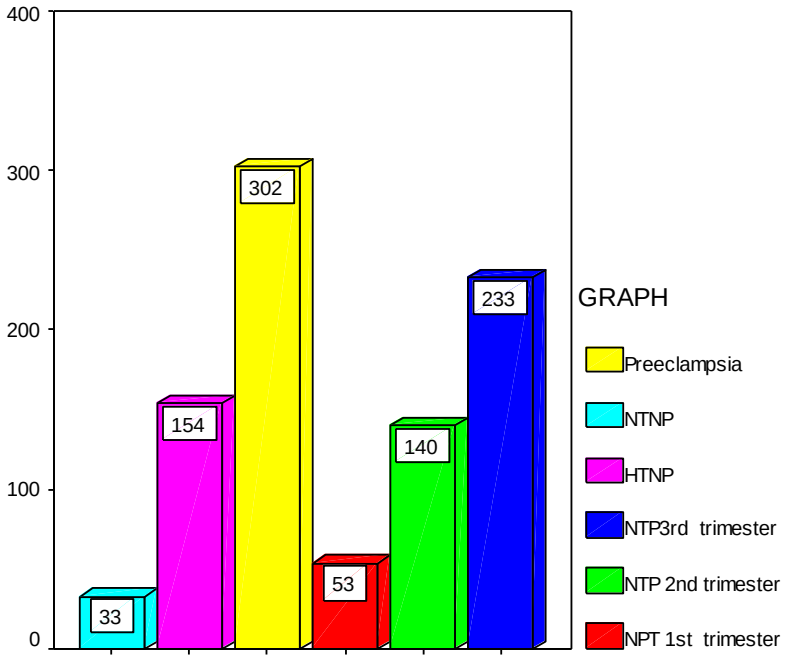
Fig. 6 shows a significant positive correlation between plasma adrenomedullin level and severity of preeclampsia in preeclamptic patients (correlation coefficient = 0.643 ,p = 0.01).

Fig.7: Mean values of age (years) in the different studied groups**.**



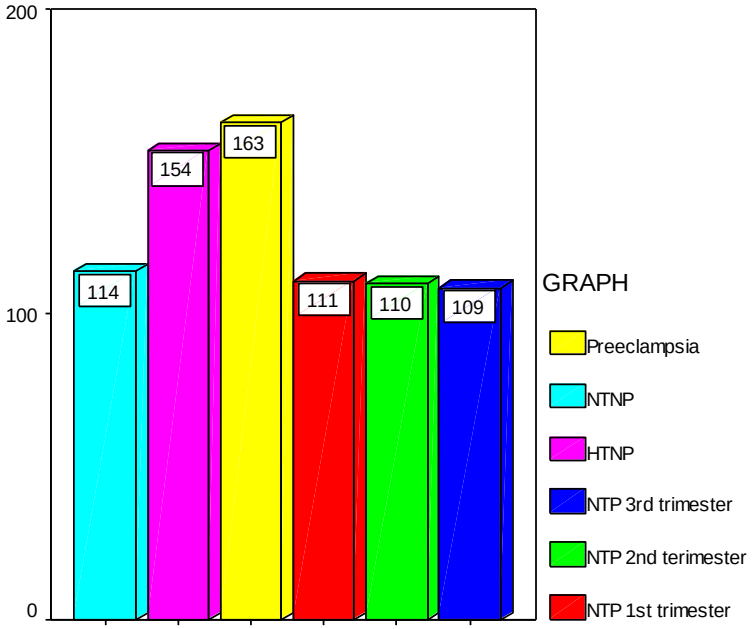
NTNP = Normotensive non-pregnant.
HTNP = Hypertensive non-pregnant.
NTP = Normotensive pregnant.

Fig.8: Mean values of plasma adrenomedullin levels in the different studied groups.



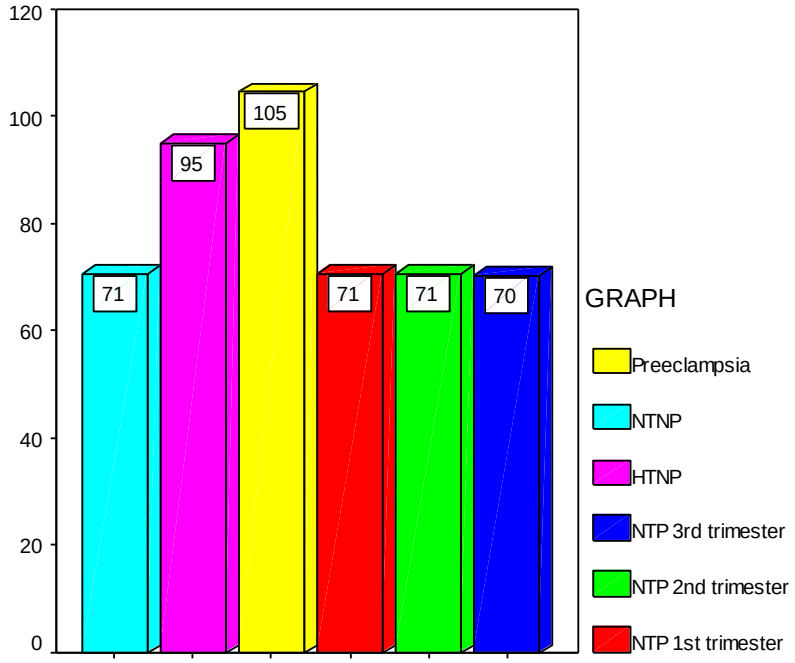
NTNP = Normotensive non-pregnant.
HTNP = Hypertensive non-pregnant.
NTP = Normotensive pregnant.

Fig.9: Mean values of systolic blood pressure (mmHg) in the different studied groups.



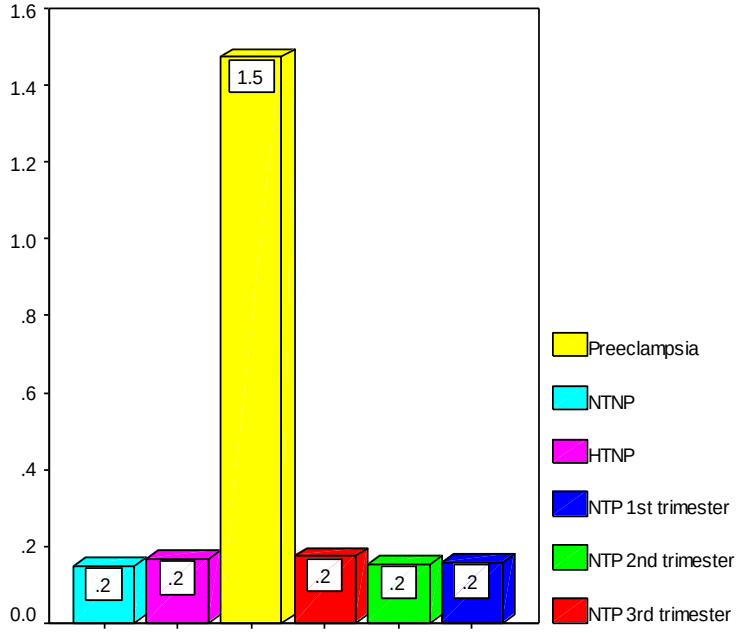
NTNP = Normotensive non-pregnant.
HTNP = Hypertensive non-pregnant.
NTP = Normotensive pregnant.

Fig.10: Mean values of diastolic blood pressure (mmHg) in the different studied groups.



NTNP = Normotensive non-pregnant.
HTNP = Hypertensive non-pregnant.
NTP = Normotensive pregnant.

Fig.11: Mean values of proteinuria in the different studied groups.



NTNP = Normotensive non-pregnant.
HTNP = Hypertensive non-pregnant.
NTP = Normotensive pregnant.