

RESULTS

1. Clinical data and laboratory assessment of the two control groups. (n = 25), Table (1) .

A - As regard to the non pregnant group:

1. Maternal age: ranged from 26 to 40 years with a mean of 29.16 and S.D. ± 3.26 years.
2. Systolic blood pressure: ranged from 100 to 130 mmHg, with a mean of 115.2 and S.D. ± 7.28 mmHg.
3. Arterial blood pressure: ranged from 60 to 90 mmHg, with a mean of 74.4 and S.D. ± 8.82 mmHg.
4. Proteinuria: ranged from 0.06 to 0.10 g/24 hr, with a mean of 0.081 g/24 hr and S.D. ± 0.013 g/24 hr.
5. Serum neopterin (N1) : ranged from 0.7 to 3.3 ng/ml, with a mean of 1.90 and S.D. ± 0.71 ng/ml.
6. PHA-induced neopterin (N2): ranged from 0.7 to 3.0 ng/ml, with a mean of 1.64 and S.D. ± 0.62 ng/ml.
7. MLC-induced neopterin (N3): ranged from 0.6 to 3.0 ng/ml, with a mean of 1.47 and S.D. ± 0.68 ng/ml.

B - As regard to the normal pregnant group:

1. Maternal age: ranged from 24 to 40 years, with a mean of 30.36 and S.D. ± 3.71 years.
2. Gestational period: ranged from 26 to 40 weeks, with a mean of 33 and S.D. ± 4.34 weeks.
3. Systolic blood pressure: ranged from 90 to 120 mmHg, with a mean of 109.4 and S.D. ± 8.93 mmHg.
4. Arterial blood pressure: ranged from 60 to 85 mmHg, with a mean of 69.6 and S.D. ± 7.76 mmHg.
5. Proteinuria: ranged from 0.06 to 0.01 g/24 hr, with a mean of 0.08 and S.D. ± 0.014 g/24 hr.
6. Serum neopterin (N1): ranged from 0.7 to 3.9 ng/ml, with a mean of 2.14 and S.D. ± 0.82 ng/ml.
7. PHA-induced neopterin (N2): ranged from 0.6 to 3.1 ng/ml, with a mean of 1.69 and S.D. ± 0.61 ng/ml.
8. MLC-induced neopterin (N3): ranged from 0.5 to 3.7 ng/ml, with a mean of 1.59 and S.D. ± 0.72 ng/ml.

2- Clinical data and laboratory assessment of the pre-eclamptic group. (n = 25) Table (1):

The results of the pre-eclamptic group are :

1. Maternal age: ranged from 24 to 41 years, with a mean of 30.76 and S.D. ± 4.98 years.
2. Gestational period: ranged from 26 to 40 weeks, with a mean of 32.6 and S.D. ± 4.43 weeks.
3. Systolic blood pressure: ranged from 145 to 240 mmHg, with a mean of 192.8 and S.D. ± 36.11 mmHg.
4. Arterial blood pressure: ranged from 95 to 145 mmHg, with a mean of 123 and S.D. ± 15.88 mmHg.
5. Proteinuria: ranged from 1.9 to 9.5 g/24 hr, with a mean of 5.08 and S.D. ± 2.46 g/24 hr.
6. Serum neopterin (N1): ranged from 5.1 to 21.0 mg/ml, with a mean of 10.22 and S.D. ± 4.17 ng/ml.
7. PHA-induced neopterin (N2): ranged from 3.7 to 17.0 ng/ml, with a mean of 8.37 and S.D. ± 3.33 ng/ml.
8. MLC-induced neopterin (N3): ranged from 3.1 to 15.0 ng/ml, with a mean of 6.98 and S.D. ± 3.12 ng/ml.

Table (1) Analysis of clinical data and laboratory parameters in non pregnant, normal pregnant and pre-eclamptic group.

Parameter	Non pregnant Group n = 25			Normal Pregnant Group n = 25			Pre-eclamptic Group n = 25		
	Mean	S.D	Range	Mean	S.D	Range	Mean	S.D	Range
Maternal age (Yr)	29.16	± 3.26	26-40	30.36	± 3.71	24-40	30.76	± 4.98	24 - 41
Gestational period (Wk)	-	-	-	33	± 4.34	26-40	32.6.0	± 4.43	26 - 40
Blood pressure									
Systolic (mmHg)	115.2	± 7.28	100-130	109.4	± 8.93	90-120	192.80	± 36.11	145-240
Arterial (mmHg)	74.40	± 8.82	60-90	69.6	± 7.76	60-85	123.00	± 15.88	95-145
Proteinuria (gm/24 hours)	0.081	± 0.013	0.06-0.10	0.08	± 0.014	0.06-0.10	5.08	± 2.46	1.9 - 9.5
N1 (ng/ml)	1.90	± 0.71	0.7-3.3	2.14	± 0.82	0.7-3.9	10.22	± 4.17	5.1 - 21
N2 (ng/ml)	1.64	± 0.62	0.7-3.0	1.69	± 0.61	0.6-3.1	8.37	± 3.33	3.7 - 17
N3 (ng/ml)	1.47	± 0.68	0.6-3.0	1.59	± 0.72	0.5-3.7	6.98	± 3.12	3.1 - 15

Abbreviations:

± S.D. = Standard deviation.

N1 = Serum neopterin.

N2 = Supernatant neopterin released by phytohemagglutinin transformed lymphocytes (PHA-induced neopterin).

N3 = Culture supernatant neopterin released by one-way mixed lymphocyte culture (MLC-induced neopterin).

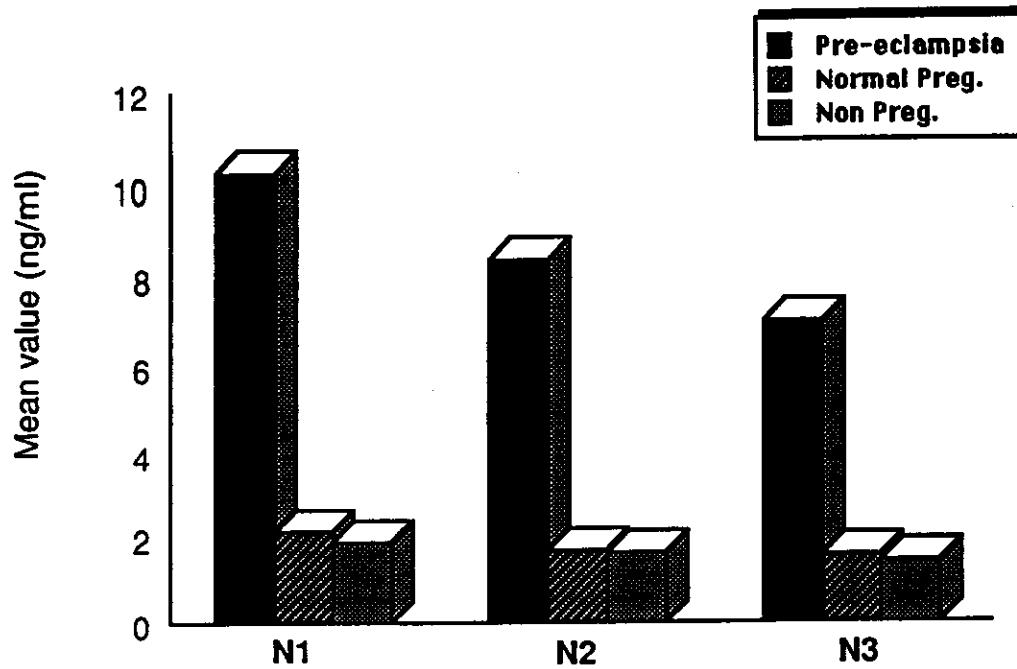


Fig. (1): Mean values of neopterin (N1, N2, and N3) in pre-eclamptic group and the two control groups (n = 25).

This figure shows:

- Increased mean levels of serum neopterin (N1), PHA-induced neopterin (N2); and MLC-induced neopterin (N3) in pre-eclamptic women than in the other two control groups.

Comparison between non pregnant and pre-eclamptic group. (n = 25) Table (2)

As regards the clinical data:

- No significant differences in the mean value of maternal age between nonpregnant and pre-eclamptic group ($P > 0.05$).

As regards the laboratory tests:

- The mean values were found to be significantly higher in pre-eclamptic women than those in the non pregnant women ($P < 0.0005$), in each of the following:
 1. Serum neopterin (N1).
 2. PHA-induced neopterin (N2).
 3. MLC-induced neopterin (N3).

Comparison between normal pregnant and pre-eclamptic group. (n = 25) Table (2):

As regards the clinical data:

- No significant differences in the mean values of maternal age and gestational period between normal pregnant and pre-eclamptic group ($P > 0.05$).

As regards the laboratory tests:

- The mean values of serum neopterin (N1), PHA-induced neopterin (N2), and MLC-induced neopterin (N3) in women with pre-eclampsia were significantly higher than those in normal pregnant women ($P < 0.0005$).

Comparison between non pregnant and normal pregnant group. (n = 25) Table (2):

Concerning the clinical data:

- No significant difference was found between non pregnant and normal pregnant women, as regarding the maternal age:

Concerning the laboratory tests:

- No significant differences were found between non pregnant and normal group in the following:
 1. Serum neopterin (N1), ($P > 0.05$): N.S.
 2. PHA-induced neopterin (N2), ($P > 0.05$): N.S.
 3. MLC-induced neopterin (N3), ($P > 0.05$): N.S.

Table (2) Comparison between non pregnant, normal pregnant, and pre-eclamptic group.

Parameter	Non pregnant Group n = 25		Normal Pregnant Group n = 25		Pre-eclamptic Group n = 25		"P" values for difference between two means *		
	Mean	S.D	Mean	S.D	Mean	S.D	P ₁	P ₂	P ₃
Maternal age (Yr)	29.16	± 3.26	30.36	± 3.71	30.76	± 4.98	N.S.	N.S.	N.S.
Gestational period (Wk)	-	-	33	± 4.34	32.6	± 4.43	N.S.	-	-
N1 (ng/ml)	1.90	± 0.71	2.14	± 0.82	10.22	± 4.17	< 0.0005	< 0.0005	N.S.
N2 (ng/ml)	1.64	± 0.62	1.69	± 0.61	8.37	± 3.33	< 0.0005	< 0.0005	N.S.
N3 (ng/ml)	1.47	± 0.68	1.59	± 0.72	6.98	± 3.12	< 0.0005	< 0.0005	N.S.

Abbreviations:

P₁ : P value between pre-eclamptic group and normal pregnant group.

P₂ : P value between pre-eclamptic group and non pregnant group.

P₃ : P value between normal pregnant group and non pregnant group.

N.S.: Not significant.

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

This table shows: highly significant differences, regarding the clinical and laboratory parameters among complicated pregnancy and the two control groups. But no significant differences between normal pregnant and non pregnant group.

Comparison between non pregnant and mild pre-eclamptic group. Table (3):

1. Serum neopterin (N1):

Non pregnant group: mean 1.90 and S.D. ± 0.71 .

Mild pre-eclamptic group: mean 6.61 and S.D. ± 0.93 .

- The mild pre-eclamptic group was found to be significantly higher than, the non pregnant group, ($P < 0.0005$).

2. PHA-induced neopterin (N2):

Non pregnant group: mean 1.64 and S.D. ± 0.62 .

Mild pre-eclamptic group: mean 5.60 and S.D. ± 1.78 .

- The mild pre-eclamptic group was found to be significantly higher than, the non pregnant group ($P < 0.0005$).

3. MLC-induced neopterin (N3):

Non pregnant group: mean 1.47 and S.D. ± 0.68 .

Mild pre-eclamptic group: mean 4.21 and S.D. ± 0.70 .

- The pre-eclamptic group was found to be significantly higher than, the non pregnant group ($P < 0.0005$).

Table (3) Comparison between non pregnant and mild pre-eclampsic group.

Parameter	Non pregnant group n = 25			Mild pre-eclampsic group n = 10			't' test *	'p' value for differences between two means
	Mean	S.D	Range	Mean	S.D	Range		
N1 (ng/ml)	1.90	± 0.71	0.7-3.0	6.61	± 0.93	5.1 - 8.0	14.4231	< 0.0005
N2 (ng/ml)	1.64	± 0.62	0.7-3.0	5.60	± 1.78	3.7 - 9.0	6.8702	< 0.0005
N3 (ng/ml)	1.47	± 0.68	0.6-3.0	4.21	± 0.70	3.1 - 5.6	10.7704	< 0.0005

Abbreviation:

"t" test (difference between two sample means)

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

This table shows : Highly significant differences between mild pre-eclampsic group and non pregnant group as regarding each of the following parameters:

- Proteinuria, Serum neopterin level, PHA-induced neopterin and MLC-induced neopterin.

Comparison between non pregnant and sever pre-eclamptic group. Table (4):

1. Serum neopterin (N1):

Non pregnant group: mean 1.90 and S.D. $\pm$ 0.71

Sever pre-eclamptic group: mean 12.63 and S.D. $\pm$ 3.71.

- The sever pre-eclamptic group was found to be significantly higher than, the non pregnant group, ($P < 0.0005$).

2. PHA-induced neopterin (N2):

Non pregnant group: mean 1.64 and S.D. $\pm$ 0.62

Sever pre-eclamptic group: mean 10.22 and S.D. $\pm$ 2.79

- The sever pre-eclamptic group was found to be significantly higher than the non pregnant group, ($P < 0.0005$).

3. MLC-induced neopterin (N3):

Non pregnant group: mean 1.47 and S.D. $\pm$ 0.68.

Sever pre-eclamptic group: mean 8.83 and S.D. $\pm$ 2.68

- The sever pre-eclamptic group was found to be significantly higher than the non pregnant group. ($P < 0.0005$).

Table (4) Comparison between non pregnant and sever pre-eclampsic group.

Parameter	Non pregnant Group n = 25			Sever pre-eclampsic Group n = 15			't' test *	'p' value for differences between two means
	Mean	S.D	Range	Mean	S.D	Range		
N1 (ng/ml)	1.90	± 0.71	0.7-3.3	12.63	± 3.71	8.8-21.0	11.0812	< 0.0005
N2 (ng/ml)	1.64	± 0.62	0.7-3.0	10.22	± 2.79	6.3-17.0	11.7389	< 0.0005
N3 (ng/ml)	1.47	± 0.68	0.6-3.0	8.83	± 2.68	5.4-15.0	10.4382	< 0.0005

As shown in this table , All the laboratory parameters have demonstrated highly significant differences between patients with sever pre-eclampsia and non pregnant women.

Abbreviations:

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

Comparison between normal pregnant and mild pre-eclamptic group. Table (5):

1. Serum neopterin (N1):

Normal pregnant group: mean 2.14 and S.D. $\pm$ 0.82.

Mild pre-eclamptic group: mean 6.61 and S.D. $\pm$ 0.93

- The mild pre-eclamptic group was found to be significantly higher than the normal pregnant group, ($P < 0.0005$).

2. PHA-induced neopterin (N2):

Normal pregnant group: mean 1.69 and S.D. $\pm$ 0.61.

Mild pre-eclamptic group: mean 5.6 and S.D. $\pm$ 1.78.

- The mild pre-eclamptic group was found to be significantly higher than the normal pregnant group, ($P < 0.0005$).

3. MLC-induced neopterin (N3):

Normal pregnant group: mean 1.59 and S.D. $\pm$ 0.72.

Mild pre-eclamptic group: mean 4.21 and S.D. $\pm$ 0.70

- The mild pre-eclamptic group was found to be significantly higher than the normal pregnant group ($P < 0.0005$).

Table (5) Comparison between normal pregnant and mild pre-eclampsic group.

Parameter	Normal pregnant group n = 25			Mild pre-eclampsic group n = 10			't' test *	"P" value for differences between two means
	Mean	S.D	Range	Mean	S.D	Range		
N1 (ng/ml)	2.14	± 0.82	0.7-3.9	6.61	± 0.93	5.1 - 8.0	13.2759	< 0.0005
N2 (ng/ml)	1.69	± 0.61	0.6-3.1	5.60	± 1.78	3.7 - 9.0	6.7893	< 0.0005
N3 (ng/ml)	1.59	± 0.72	0.5-3.7	4.21	± 0.70	3.1 - 5.6	3.4775	< 0.0005

Abbreviations:

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

This table shows that, comparing the different types of neopterin, patients suffering from mild pre-eclampsia had higher significant levels than normal pregnant group.

Comparison between normal pregnant and sever pre-eclamptic group. Table (6)

1. Serum neopterin (N1):

Normal pregnant group: mean 2.14 and S.D. $\pm$ 0.82

Sever pre-eclamptic group: mean 12.63 and S.D. $\pm$ 3.71

- The sever pre-eclamptic group was found to be significantly higher than the normal pregnant group, ($P < 0.0005$).

2. PHA-induced neopterin (N2):

Normal pregnant group: mean 1.69 and S.D. $\pm$ 0.61

Sever pre-eclamptic group: mean 10.22 and S.D. $\pm$ 2.79.

- The sever pre-eclamptic group was found to be significantly higher than the normal pregnant group, ($P < 0.0005$).

3. MLC-induced neopterin (N3):

Normal pregnant group: mean 1.59 and S.D. $\pm$ 0.72

Sever pre-eclamptic group: mean 8.83 and S.D. $\pm$ 2.68.

- The sever pre-eclamptic group was found to be significantly higher than the normal pregnant group, ($P < 0.0005$).

Table (6) Comparison between normal pregnant and sever pre-eclampsic group.

Parameter	Normal pregnant group n = 25			Sever pre-eclampsic Group n = 15			't' test *	'p' value for differences between two means
	Mean	S.D	Range	Mean	S.D	Range		
N1 (ng/ml)	2.14	± 0.82	0.7-3.9	12.63	± 3.71	8.8-21.0	10.7944	< 0.0005
N2 (ng/ml)	1.69	± 0.61	0.6-3.1	10.22	± 2.79	6.3-17.0	11.6753	< 0.0005
N3 (ng/ml)	1.59	± 0.72	0.5-3.7	8.83	± 2.68	5.4-15.0	10.2433	< 0.0005

This Table points to highly significant differences of levels including all laboratory parameters in the sever form of pre-eclampsia comparing to that in the normal pregnant group.

Abbreviations:

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

Comparison between mild and sever pre-eclamptic group. Table (7):

1. Serum neopterin (N1):

Mild pre-eclamptic group: mean 6.61 and S.D. $\pm$ 0.93.

Sever pre-eclamptic group: mean 12.63 and S.D. $\pm$ 3.71

- The sever pre-eclamptic group was found to be significantly higher than the mild pre-eclamptic group, (P, 0.0005).

2. PHA-induced neopterin (N2):

Mild pre-eclamptic group: mean 5.6 and S.D. $\pm$ 1.78

Sever pre-eclamptic group: mean 10.22 and S.D. $\pm$ 2.79.

- The sever pre-eclamptic group was found to be significantly higher than the mild pre-eclamptic group, (P < 0.0005).

3. MLC-induced neopterin (N3):

Mild pre-eclamptic group: mean 4.21 and S.D. $\pm$ 0.70.

Sever pre-eclmpaitc group: mean 8.83 and S.D. $\pm$ 2.68.

- The sever pre-eclamptic group was found to be significantly higher than the mild pre-eclamptic group (P < 0.0005).

Table (7) Comparison between mild pre-eclamptic and sever pre-eclamptic group.

Parameter	Mild pre-eclamptic group n = 10			Sever pre-eclamptic Group n = 15			"t" test *	"P" value for differences between two means
	Mean	S.D	Range	Mean	S.D	Range		
N1 (ng/ml)	6.61	± 0.93	5.1 - 8.0	12.63	± 3.71	8.8-21.0	6.001	< 0.0005
N2 (ng/ml)	5.60	± 1.78	3.7 - 9.0	10.22	± 2.79	6.3-17.0	5.05	< 0.0005
N3 (ng/ml)	4.21	± 0.70	3.1 - 5.6	8.83	± 2.68	5.4-15.0	6.35	< 0.0005

As shown in this table : Significantly higher levels of all laboratory parameters were found in the sever pre-eclamptic patients than in the mild form of pre-eclampsia.

Abbreviations:

N1: Serum neopterin, N2: PHA-induced neopterin, N3: MLC-induced neopterin.

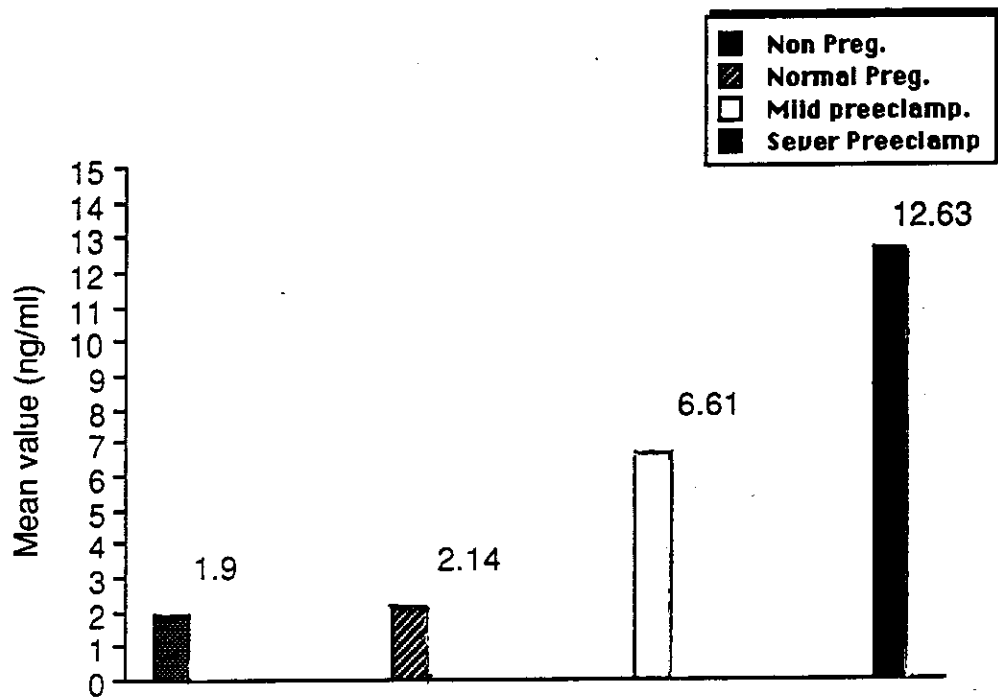


Fig. (2) : Mean values of serum neopterin (N1) in mild and sever pre-eclampsia versus the two control groups .

This figure shows:

- higher mean levels of serum neopterin (N1) in mild and sever pre-eclamptic groups than the other two groups.

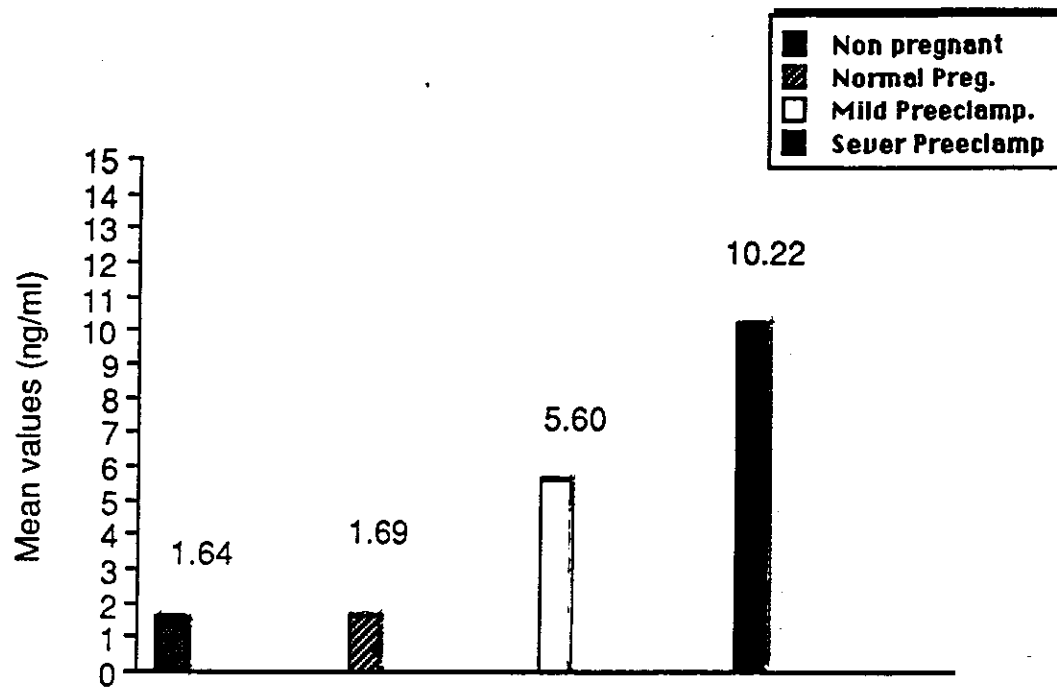


Fig. (3): Mean values of PHA-induced neopterin (N2) in mild and sever pre-eclampsia versus the two control groups.

This figure shows:

- A higher mean levels of PHA-induced neopterin (N2) in mild and sever pre-eclamptic groups than the other two groups.

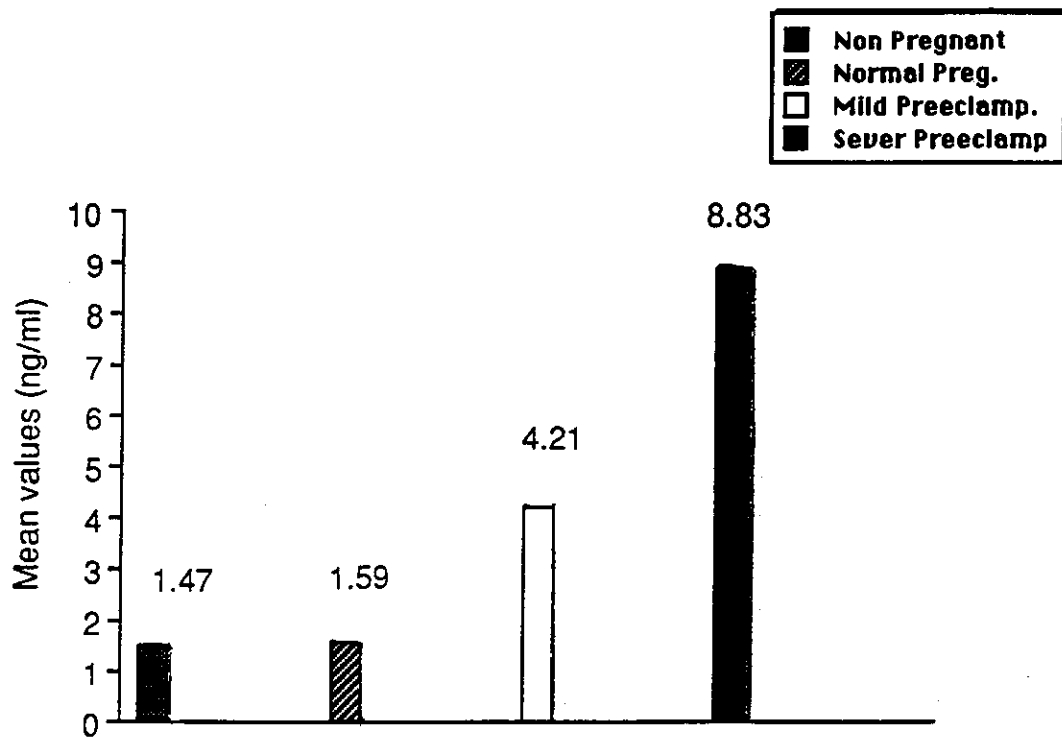


Fig. (4): Mean values of MLC-induced neopterin (N3) in mild and sever pre-eclampsia versus the two control groups.

This figure shows:

- A higher mean levels of MLC-induced neopterin (N3) in mild and sever pre-eclamptic groups than the other two groups.

Table (8): Distribution of serum neopterin in the two grades of pre-eclampsia and the two control groups.

N ₁ (ng/ml)	Mild pre-eclamptic group n = 10		Sever pre-eclamptic group n = 15		Normal pregnant group n = 25		Non pregnant group n = 25	
	No.	%	No.	%	No.	%	No.	%
0 - 3	0	0	0	0	20	80	24	96
3 - 6	3	30	0	0	5	20	1	4
6 - 9	7	70	2	13.33	0	0	0	0
9 - 12	0	0	6	40	0	0	0	0
12 - 15	0	0	3	20	0	0	0	0
15 - 18	0	0	2	13.33	0	0	0	0
18 - 21	0	0	2	13.33	0	0	0	0

Regarding Serum neopterin (N₁), This Table shows that:

- 96% of non pregnant women and 80% of normal pregnant women had concentrations not above 3 ng/ml.
- 70% of mild pre-eclamptic patients had concentrations above 6 ng/ml, but not more than 9 ng/ml.
- 86.66% of sever pre-eclamptic patients had concentrations above 9 ng/ml.

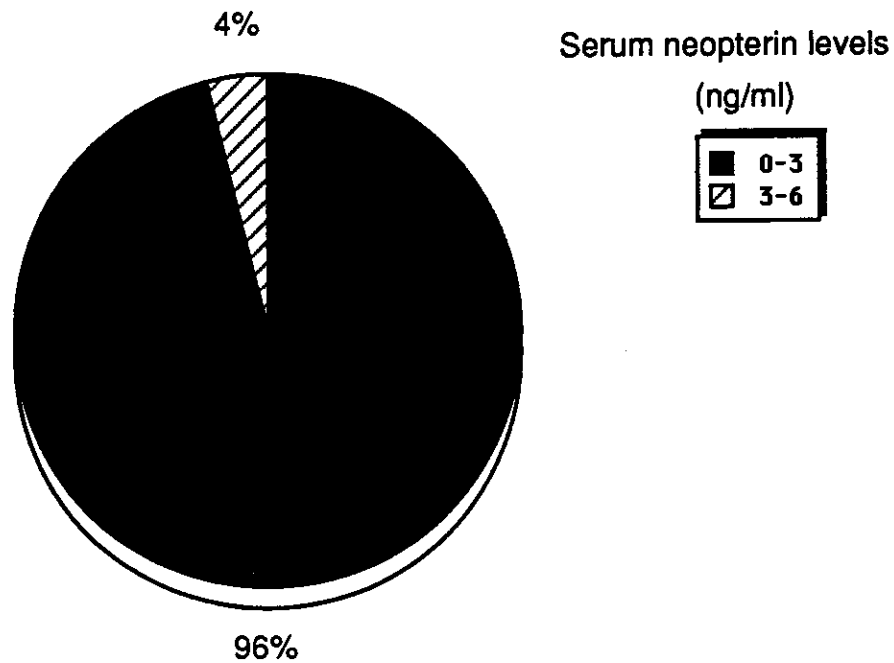


Fig. (5): Percentage distribution of non pregnant women (control group) according to serum neopterin.

This figure shows:

- 96% of normal pregnant women had concentrations of serum neopterin (N1) ranged from 0-3 ng/ml., while 4% ranged from 3-6 ng/ml.

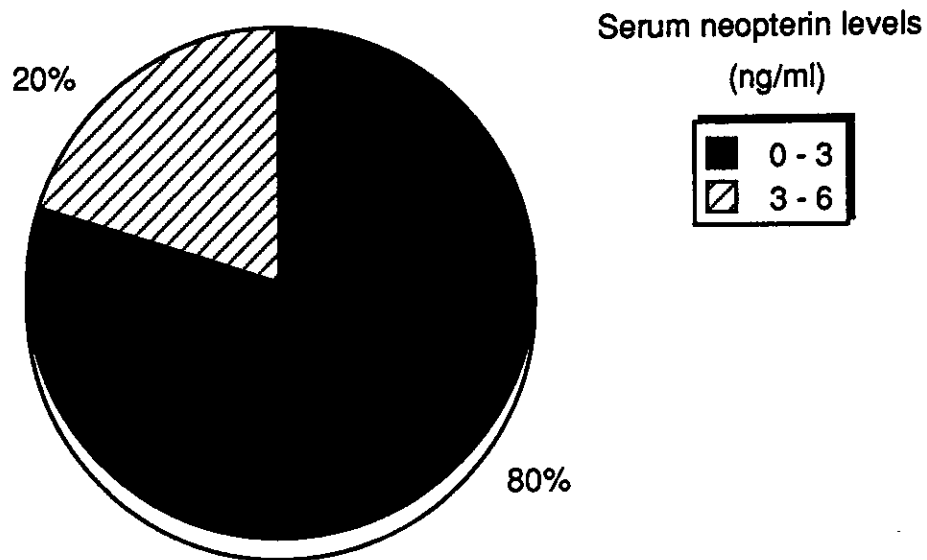


Fig. (6): Percentage distribution of normal pregnant women (control group) according to serum neopterin.

This figure shows:

- 80% of normal pregnant women had concentrations of serum neopterin (N1) ranged from 0-3 ng/ml, while 20% ranged from 3-6 ng/ml.

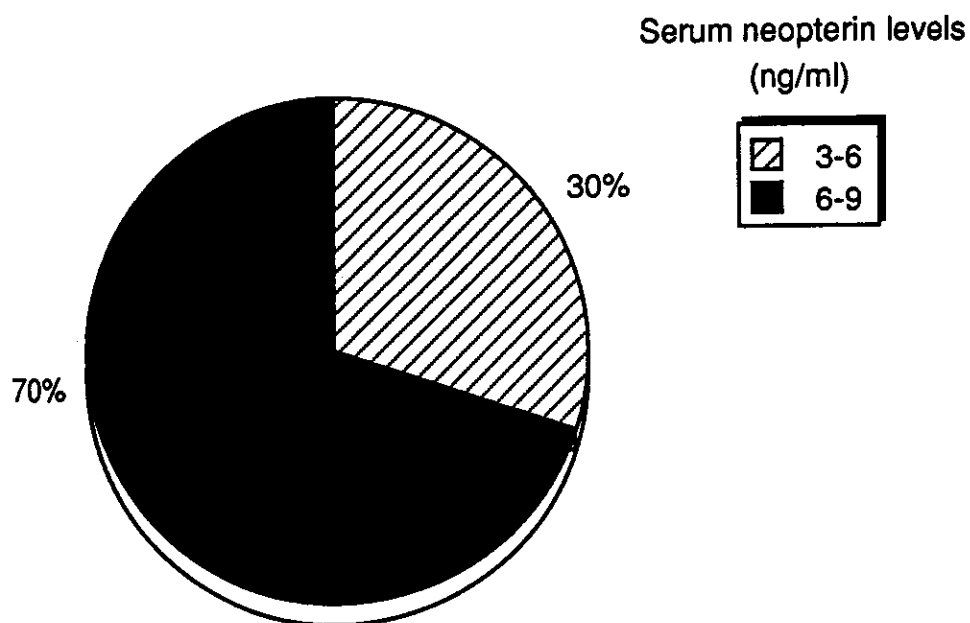


Fig. (7): Percentage distribution of mild pre-eclamptic patients according to serum neopterin.

This figure shows:

- 70% of mild pre-eclamptic patients had concentrations of serum neopterin ranged from 6-9 ng/ml, while 30% ranged from 3-6 ng/ml.

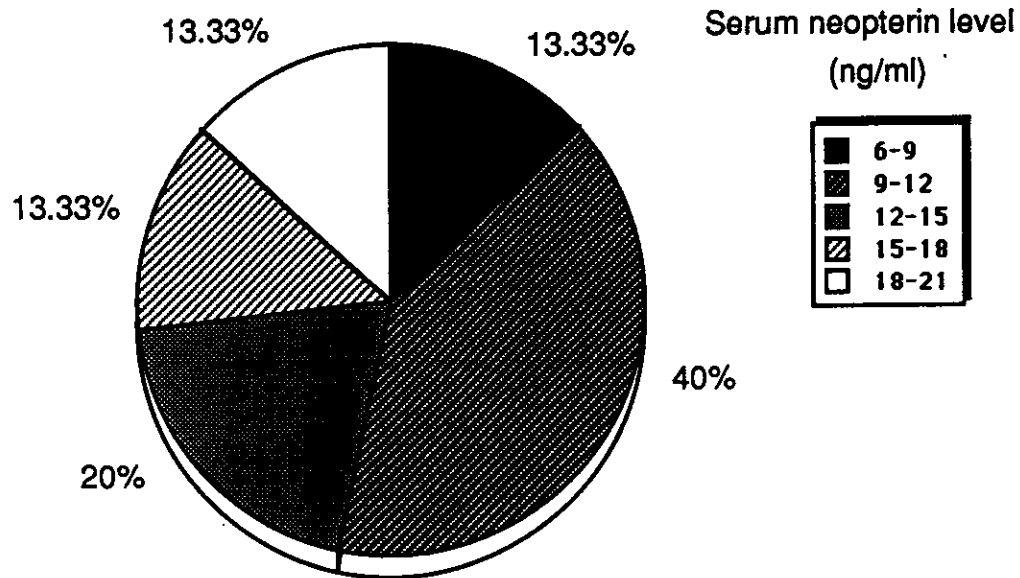


Fig. (8): Percentage distribution of sever pre-eclamptic patients according to serum neopterin.

This figure shows:

- 13.33% of severe pre-eclamptic patients had concentrations of serum neopterin ranged from 6-9 ng/ml.
- while 40% had concentrations ranged from 9-12 ng/ml.
- and 46.66% had concentrations ranged from 12-21 ng/ml.

Table (9) : Distribution of PHA-induced neopterin in the two grades of pre-eclampsia and the two control groups.

N₂ (ng/ml)	Mild pre-eclamptic group n = 10		Sever pre-eclamptic group n = 15		Normal pregnant group n = 25		Non pregnant group n = 25	
	No.	%	No.	%	No.	%	No.	%
0 - 3	0	0	0	0	24	96	25	100
3 - 6	7	70	0	0	1	4	0	0
6 - 9	3	30	5	33.33	0	0	0	0
9 - 12	0	0	7	46.66	0	0	0	0
12 - 15	0	0	2	13.33	0	0	0	0
15 - 18	0	0	1	6.66	0	0	0	0

Regarding PHA-induced neopterin (N₂), This Table shows that:

- 96% of normal pregnant and all non-pregnant women had concentrations not above 3 ng/ml.
- 70% of mild pre-eclamptic patients had concentrations not above 6 ng/ml.
- 66.66% of sever pre-eclamptic patients had concentrations above 9 ng/ml.

Table (10): Distribution of MLC-induced neopterin in the two grades of pre-eclampsia and the two control groups.

N₃ (ng/ml)	Mild pre-eclamptic group n = 10		Sever pre-eclamptic group n = 15		Normal pregnant group n = 25		Non pregnant group n = 25	
	No.	%	No.	%	No.	%	No.	%
0 - 3	0	0	0	0	24	96	25	100
3 - 6	10	100	1	6.66	1	4	0	0
6 - 9	0	0	10	66.66	0	0	0	0
9 - 12	0	0	2	13.33	0	0	0	0
12 - 15	0	0	2	13.33	0	0	0	0

Regarding MLC-induced neopterin (N₃), this table shows that :

- All non pregnant women had concentrations not above 3 ng/ml.
- 96% of normal pregnant women had concentrations not above 3 ng/ml.
- All patients with mild pre-eclampsia had concentrations not less than 3 ng/ml and not more than 6 ng/ml.
- 93.33% of sever pre-eclamptic patients had concentrations above 6 ng/ml.

Table (11): Correlation (r) between the clinical parameters of non pregnant group and neopterin (N1, N2, and N3)

Parameters	N1 (ng/ml)	N2 (ng/ml)	N3 (ng/ml)
Maternal age (yr)	0.119 N.S.	0.085 N.S.	0.036 N.S.
Systolic Blood pressure (mmHg).	0.235 N.S.	0.161 N.S.	0.218 N.S.
Arterial blood pressure (mmHg).	0.134 N.S.	0.062 N.S.	0.024 N.S.
Proteinuria (g/24 hr).	0.033 N.S.	0.165 N.S.	0.011 N.S.

Abbreviation :

N.S.: Not significant

This Table shows:

- No significant correlation between the clinical parameters and neopterin (N1, N2, N3) in the non pregnant group.

Table (12) Correlation (r) among neopterin (N1, N2, and N3) in non pregnant group.

Variable	N1 (ng/ml)	N2 (ng/ml)
N1 (ng/ml)	- -	0.856 P<0.0005
N3 (ng/ml)	0.796 P<0.0005	0.806 P<0.0005

This table shows:

- Highly positive significant correlations between each of the following:
 1. N1 and N2 (P < 0.0005).
 2. N1 and N3 (P < 0.0005).
 3. N2 and N3 (P < 0.0005).

Table (13): Correlation (r) between the clinical parameters of normal pregnant group and neopterin (N1, N2, and N3)

Parameters	N1 (ng/ml)	N2 (ng/ml)	N3 (ng/ml)
Maternal age (yr)	0.100 N.S.	0.047 N.S.	0.009 N.S.
Gestational period (Wk)	0.092 N.S.	0.155 N.S.	0.232 N.S.
Systolic Blood pressure (mmHg).	0.063 N.S.	0.176 N.S.	0.019 N.S.
Arterial blood pressure (mmHg).	0.207 N.S.	t: 0.231 N.S.	0.130 N.S.
Proteinuria (g/24 hr).	0.160 N.S.	0.146 N.S.	0.068 N.S.

Abbreviation :

N.S.: Not significant

This Table shows:

- No significant correlation between the clinical parameters and neopterin (N1,N2,N3) in the normal pregnant group

Table (14) Correlation (r) among neopterin (N1, N2, and N3) in normal pregnant group.

Variable	N1 (ng/ml)	N2 (ng/ml)
N1 (ng/ml)	-	0.687 P<0.0005
N3 (ng/ml)	0.672 P<0.0005	0.560 P<0.005

This table shows:

- Highly positive significant correlations between each of the following:

1. N1 and N2 ($P < 0.0005$).
2. N1 and N3 ($P < 0.0005$).
3. N2 and N3 ($P < 0.005$).

Table (15): Correlation (r) between the clinical parameters of pre-eclamptic group (n = 25) and neopterin (N1, N2, and N3)

Parameters	N1 (ng/ml)	N2 (ng/ml)	N3 (ng/ml)
Maternal age (yr)	0.231 N.S.	0.132 N.S.	0.111 N.S.
Gestational period (Wk)	0.013 N.S.	0.171 N.S.	0.088 N.S.
Systolic Blood pressure (mmHg).	0.884 P < 0.0005	0.784 P < 0.0005	0.831 P < 0.0005
Arterial blood pressure (mmHg).	0.733 P < 0.0005	0.681 P < 0.0005	0.692 P < 0.0005
Proteinuria (g/24 hr).	0.878 P < 0.0005	0.724 P < 0.0005	0.783 P < 0.0005

Abbreviation :

N.S.: Not significant

This Table shows:

1. No significant correlations were found between N1, N2, N3 and maternal age or gestational period.
2. Highly positive significant correlations were found between N1, N2, N3,

Table (16) Correlation (r) among neopterin (N1, N2, and N3) in pre-eclamptic group (n = 25).

Variable	N1 (ng/ml)	N2 (ng/ml)
N1 (ng/ml)	-	0.830 P<0.0005
N3 (ng/ml)	0.901 P<0.0005	0.814 P<0.0005

This table shows:

- Highly positive significant correlations between each of the following:
 1. N1 and N2 (P < 0.0005).
 2. N1 and N3 (P < 0.0005).
 3. N2 and N3 (P < 0.0005).

Correlation (r) between serum neopterin and different parameters in pre-eclamptic group. (n = 25)

A. No significant correlation was seen between serum neopterin (N1) and maternal age or gestational period .

B. Highly significant correlation between serum neopterin (N1) and the following parameters:

1. Systolic blood pressure, ($P < 0.0005$), Fig. (9).
2. Arterial blood pressure, ($P < 0.0005$), Fig. (10).
3. Proteinuria, ($P < 0.0005$), Fig. (11).
4. PHA-induced neopterin (N2), ($P < 0.0005$).
5. MLC-induced neopterin (N3), ($P < 0.0005$).

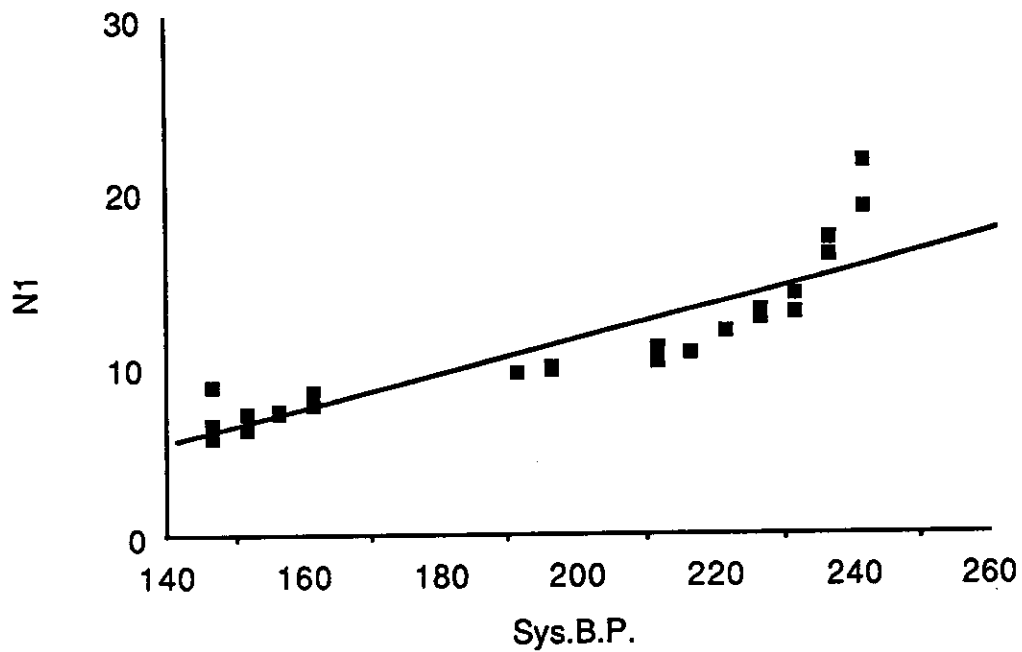


Fig. (9) Scatter diagram for systolic blood pressure and N1 in pre-eclamptic group (n = 25).

$r = 0.8839$, $t = 9.197$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between systolic blood pressure and serum neopterin (N1).

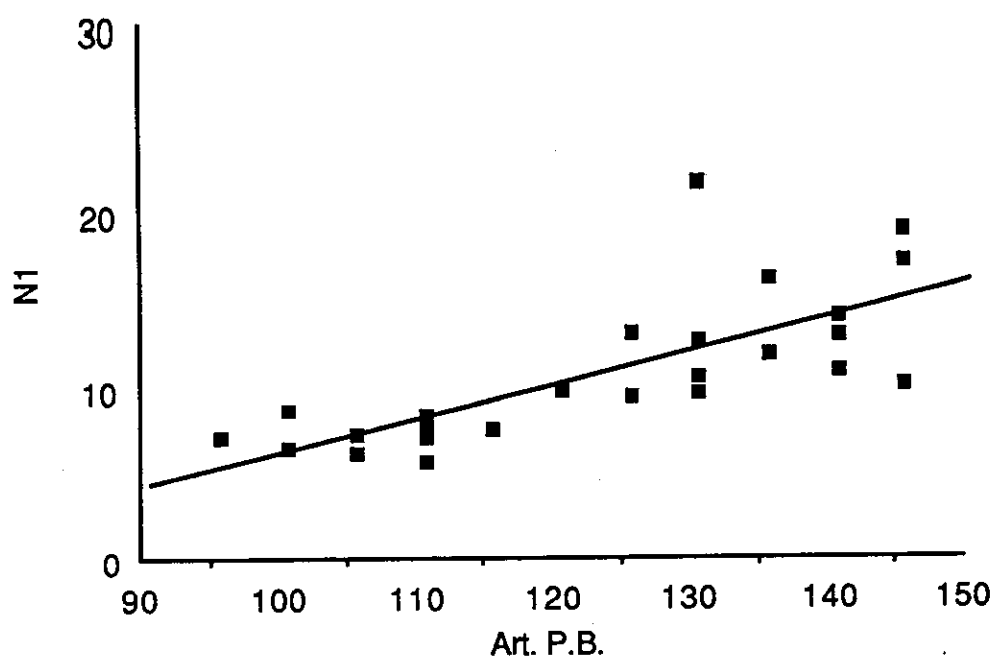


Fig. (10) Scatter diagram for arterial blood pressure and N1 in pre-eclamptic group (n = 25).

$r = 0.7331$, $t = 5.249$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between arterial blood pressure and serum neopterin (N1).

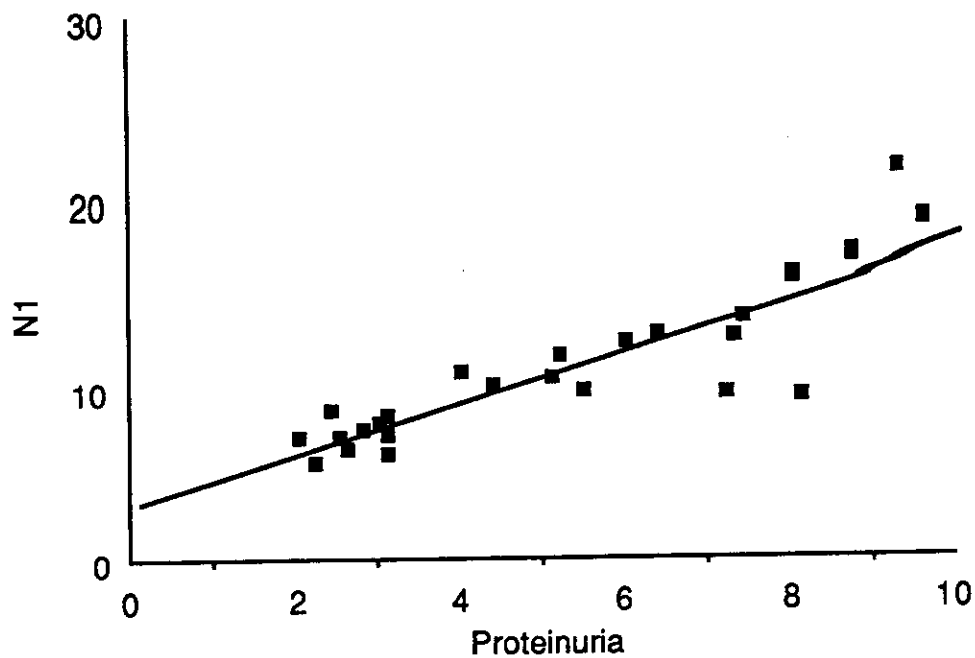


Fig. (11) Scatter diagram for Proteinuria and N1 in pre-eclamptic group (n = 25).

$r = 0.8785$, $t = 9.156$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between proteinuria and serum neopterin (N1) .

**Correlation (r) between PHA-induced neopterin (N2)
and different parameters in pre-eclamptic group (n =
25).**

A. No significant correlation between PHA-induced neopterin (N2) and
each of :

1. Maternal age.
2. Gestational period.

B. Highly significant correlations between PHA-induced neopterin (N2)
and the following:

1. Systolic blood pressure, ($P < 0.0005$), Fig. (12).
2. Arterial blood pressure, ($P < 0.0005$), Fig. (13).
3. Proteinuria, ($P < 0.0005$), Fig. (14).
4. Serum neopterin (N1), ($P < 0.0005$).
5. MLC-induced neopterin (N3), ($P < 0.0005$).

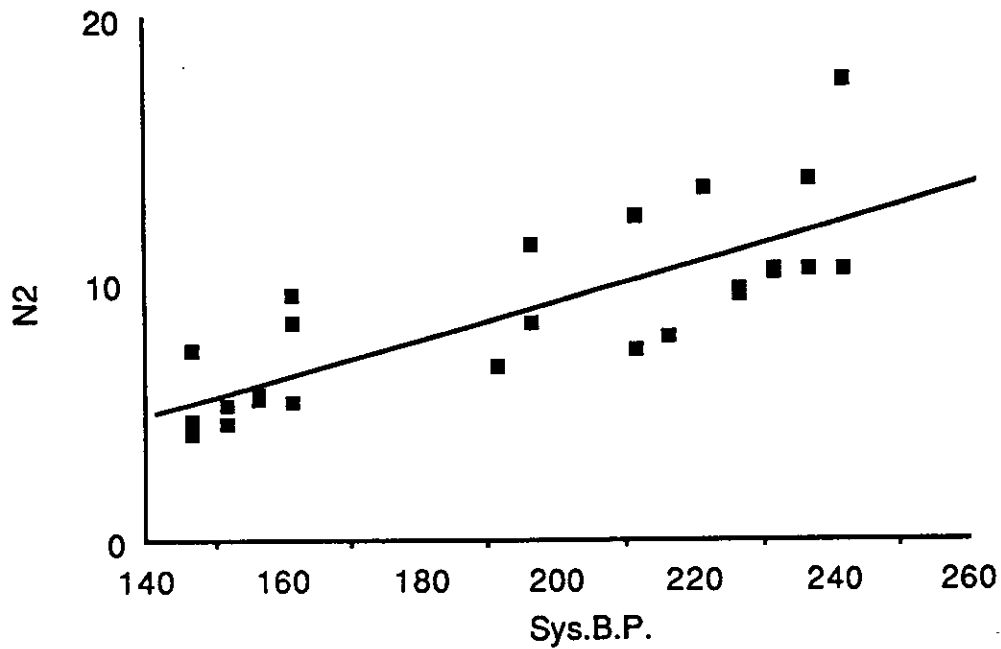


Fig. (12) Scatter diagram for systolic blood pressure and N2 in pre-eclamptic group (n = 25).

$r = 0.7842$, $t = 6.155$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between systolic blood pressure and PHA-induced neopterin (N2) .

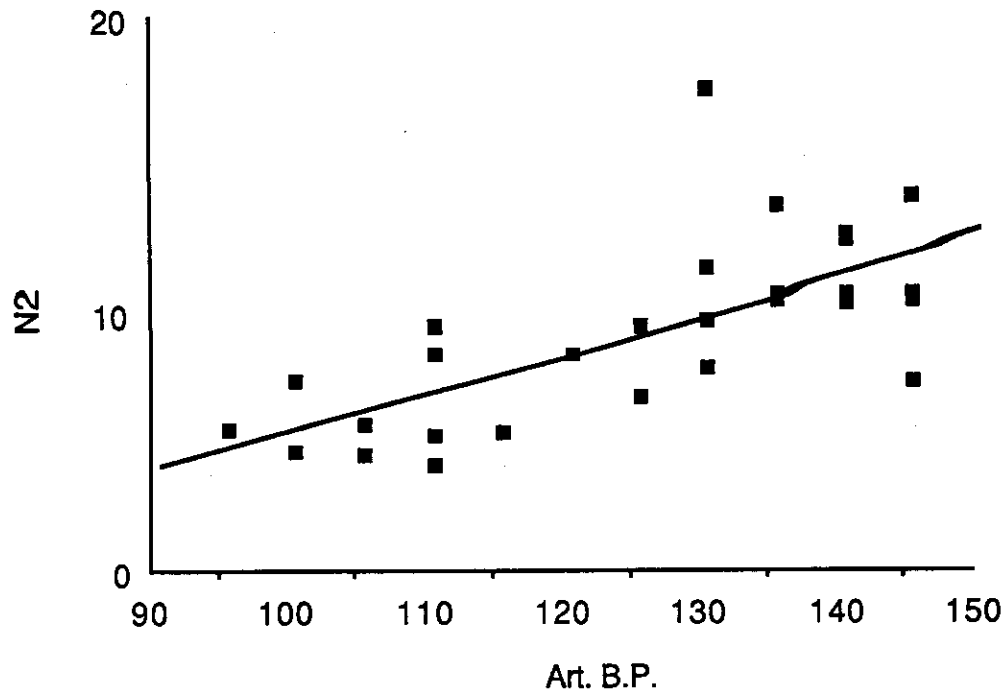


Fig. (13) Scatter diagram for arterial blood pressure and N2 in pre-eclamptic group (n = 25).

$r = 0.6814$, $t = 4.555$, and $P < 0.0005$.

This figure shows:

- A highly significant correlation (r) between arterial blood pressure and PHA-induced neopterin (N2).

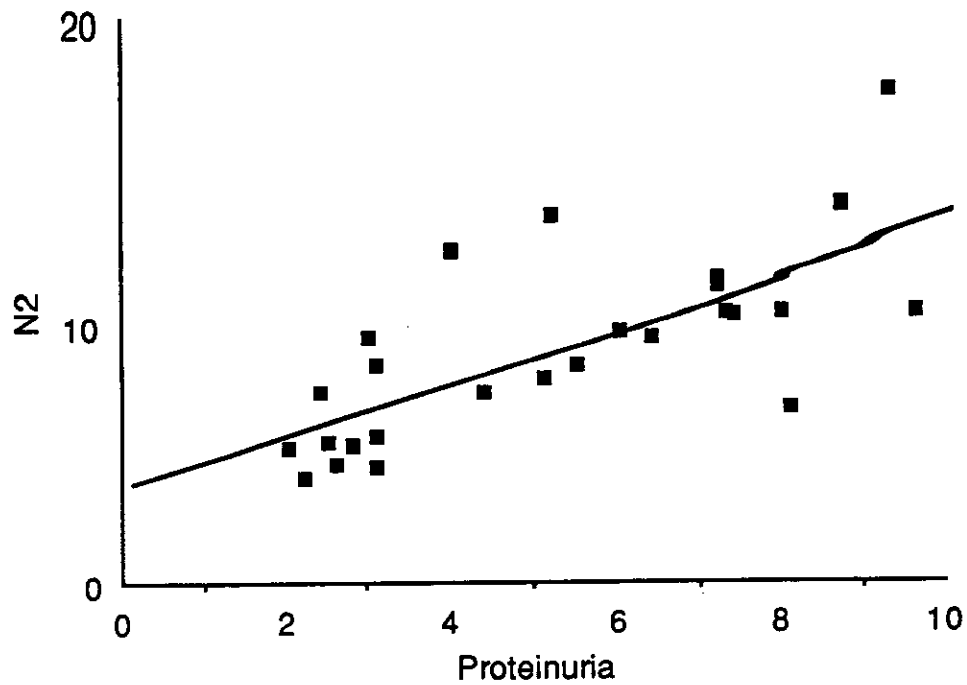


Fig. (14) Scatter diagram for proteinuria and N2 in pre-eclamptic group (n = 25).

$r = 0.7241$, $t = 5.102$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between proteinuria and PHA-induced neopterin (N2) .

Correlation (r) between MLC-induced neopterin (N3) and different parameters in pre-eclamptic group.

- A.** No significant correlations between MLC-induced neopterin (N3) and each of maternal age or gestational period.
- B.** Highly significant correlations between MLC-induced neopterin and the following parameters:
1. Systolic blood pressure, ($P < 0.0005$), Fig. (15).
 2. Arterial blood pressure, ($P < 0.0005$), Fig. (16).
 3. Proteinuria, ($P < 0.0005$), Fig. (17).
 4. Serum neopterin (N1), ($P < 0.0005$).
 5. PHA-induced neopterin (N2), ($P < 0.005$).

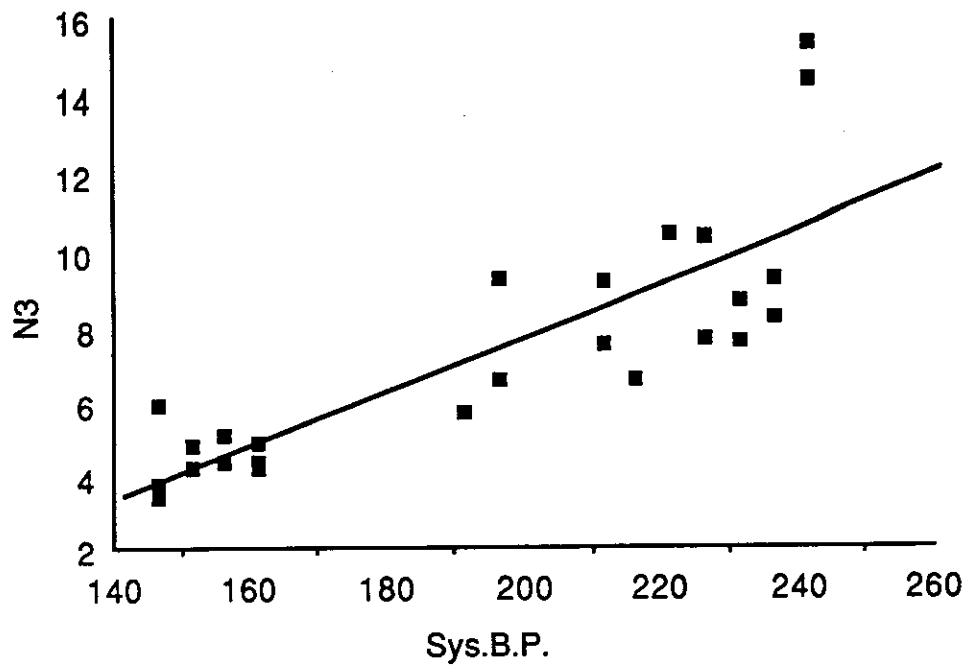


Fig. (15) Scatter diagram for systolic blood pressure and N3 in pre-eclamptic group (n = 25).

$r = 0.8310$, $t = 7.251$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between systolic blood pressure and MLC-induced neopterin (N3) .

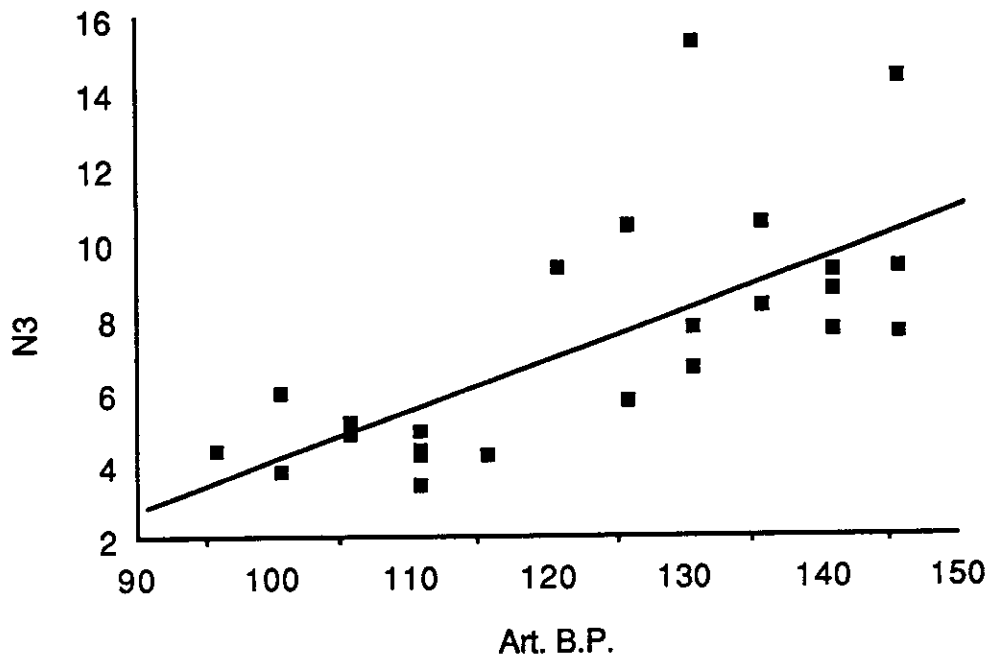


Fig. (16) Scatter diagram for arterial blood pressure and N3 in pre-eclamptic group (n = 25).

$r = 0.6922$, $t = 4.686$, and $P < 0.0005$.

This figure shows:

- A highly significant correlation (r) between arterial blood pressure and MLC-induced neopterin (N3) .

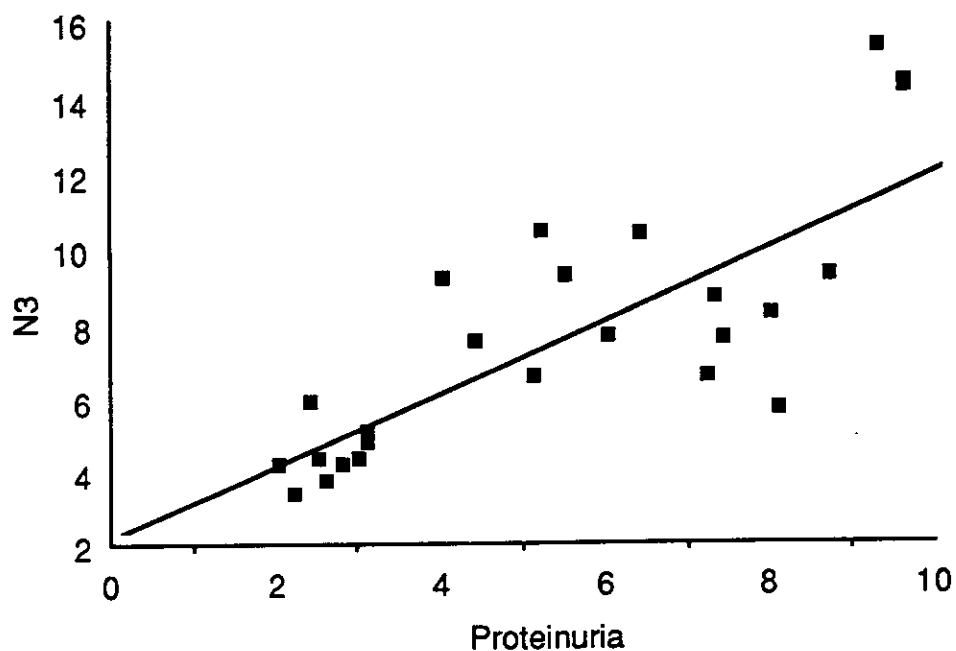


Fig. (17) Scatter diagram for proteinuria and N3 in pre-eclamptic group (n = 25).

$r = 0.7830$, $t = 6.152$, and $P < 0.0005$

This figure shows:

- A highly significant correlation (r) between proteinuria and MLC-induced neopterin (N3)

Table (17): Correlation (r) between the clinical parameters of mild pre-eclamptic group and neopterin (N1, N2, and N3)

Parameters	N1 (ng/ml)	N2 (ng/ml)	N3 (ng/ml)
Maternal age (yr)	0.160 N.S.	0.051 N.S.	0.106 N.S.
Gestational period (Wk)	0.144 N.S.	0.123 N.S.	0.101 N.S.
Systolic Blood pressure (mmHg).	0.485 P<0.05	t: 0.549 P<0.005	0.457 P<0.05
Arterial blood pressure (mmHg).	0.645 P<0.0005	0.789 P<0.0005	0.696 P<0.0005
Proteinuria (g/24 hr).	0.553 P<0.005	0.693 P<0.0005	0.487 P<0.05

Abbreviation :

N.S.: Not significant

This Table shows:

1. No significant correlations were found between N1, N2, N3 and maternal age or gestational period.
2. Highly positive significant correlations were found between N1, N2, N3, and each of systolic, arterial blood pressure and proteinuria.

Table (18) Correlation (r) among neopterin (N1, N2, and N3) in mild pre-eclamptic group.

Variable	N1 (ng/ml)	N2 (ng/ml)
N1 (ng/ml)	- -	0.827 P<0.0005
N3 (ng/ml)	0.718 P<0.0005	0.488 P<0.05

This table shows:

- Highly positive significant correlations between each of the following:
 1. N1 and N2 (P < 0.0005).
 2. N1 and N3 (P < 0.0005).
 3. N2 and N3 (P < 0.05).

Table (19): Correlation (r) between the clinical parameters of sever pre-eclamptic group and neopterin (N1, N2, and N3)

Parameters	N1 (ng/ml)	N2 (ng/ml)	N3 (ng/ml)
Maternal age (yr)	0.159 N.S.	0.144 N.S.	0.129 N.S.
Gestational period (Wk)	0.068 N.S.	0.193 N.S.	0.171 N.S.
Systolic Blood pressure (mmHg).	0.863 P < 0.0005	0.527 P < 0.005	0.619 P < 0.0005
Arterial blood pressure (mmHg).	0.581 P < 0.005	0.445 P < 0.05	0.562 P < 0.005
Proteinuria (g/24 hr).	0.747 P < 0.0005	0.516 P < 0.005	0.438 P < 0.05

Abbreviation :

N.S.: Not significant

This Table shows:

1. No significant correlations were found between N1, N2, N3 and maternal age or gestational period.
2. Highly positive significant correlations were found between N1, N2, N3, and each of systolic, arterial blood pressure and proteinuria.

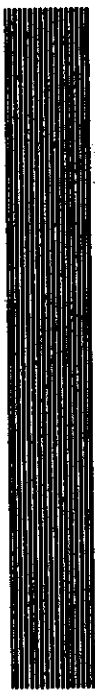
Table (20) Correlation (r) among neopterin (N1, N2, and N3) in sever pre-eclamptic group.

Variable	N1 (ng/ml)	N2 (ng/ml)
N1 (ng/ml)	-	0.673
	-	P<0.0005
N3 (ng/ml)	0.791	0.659
	P<0.0005	P<0.0005

This table shows:

- Highly positive significant correlations between each of the following:

1. N1 and N2 (P < 0.0005).
2. N1 and N3 (P < 0.0005).
3. N2 and N3 (P < 0.0005).



DICUSSION

