

RESULTS

This study was carried out on 68 subjects divided into two groups.

Group I: Normal control group 20 apparently healthy volunteer individuals.

Group II: Myocardial infarction (MI) offsprings. 48 subjects 23 male and 25 females.

Clinical data in the two groups: Table (5).

1- Age

- In control group.

Age ranged from 15-35 years with a mean of 23.3 ± 6.21 years.

- In MI offsprings group.

Age ranged from 15-35 years with a mean of 22.9 ± 5.60 years.

2- Height

- In control group.

Height ranged from 1.40-1.85m with a mean of 1.63 ± 0.12 m.

- In MI offsprings group.

Height ranged from 1.40-1.78m with a mean of 1.62 ± 0.09 m.

3-Weight

- In control group.

Weight ranged from 44-87 kg with a mean of 65.9 ± 11.15 kg .

- In MI offsprings group.

Weight ranged from 46-80 kg with a mean of 65.9 ± 8.1 kg.

4- Body mass index (BMI):**- In control group.**

BMI ranged from 22.4-27 kg/m² with a mean of 24.7 ± 1.04 kg/m².

- In MI offsprings group.

BMI ranged from 21.9-28.7 kg/m² with a mean of 25 ± 1.12 kg/m².

5- Systolic blood pressure (SBP):**- In control group.**

SBP ranged from 110-140 mmHg with a mean of 122.3 ± 7.69 mmHg.

- In MI offsprings group.

SBP ranged from 110-140 mmHg with a mean of 124.2 ± 9.91 mmHg.

6- Diastolic blood pressure (DBP):**- In control group.**

DBP ranged from 60-90 mmHg with a mean of 79.8 ± 7.69 mmHg.

-In MI offsprings group.

DBP ranged from 60-90 mmHg with a mean of 79.8 ± 7.43 mmHg.

Studied Parameters in the two groups: Table (6):**- Fasting blood glucose level (FBG):****- In control group:**

FBG level ranged from 3.9-5.6 mmol/l with a mean of 4.7 ± 0.52 mmol/l.

- In MI offsprings group.

FBG level ranged from 3.9-6.1 mmol/l with a mean of 4.6 ± 0.48 mmol/l, which was non significantly different when compared with the control group ($t= 0.75$, $P > 0.05$).

- Total cholesterol level (TC): Fig. (2).

- In control group.

TC level ranged from 3.1 - 4.7 mmol/l with a mean of 3.9 ± 0.42 mmol/l.

- In MI offsprings group.

TC level ranged from 3.1 - 6.5 mmol/l with a mean of 4.6 ± 0.63 mmol/l, which was highly significantly increased when compared with the control group ($t = 4.56$, $P < 0.001$).

- High density lipoprotein cholesterol level (HDL-C): Fig. (3):

- In control group.

HDL-C level ranged from 0.8-1.5 mmol/l with a mean of 1.2 ± 0.18 mmol/l.

- In MI offsprings group.

HDL-C level ranged from 0.6-1.2 mmol/l with a mean of 0.9 ± 0.14 mmol/l, which was highly significantly decreased when compared with the control group ($t = 7.01$, $P < 0.001$).

- Low density lipoprotein cholesterol level (LDL-C): Fig. (4)

- In control group.

LDL-C level ranged from 1.8-3 mmol/l with a mean of 2.3 ± 0.41 mmol/l.

- In MI offsprings group.

LDL-C level ranged from 1.9-4.4 mmol/l with a mean of 2.8 ± 0.49 mmol/l, which was highly significantly increased when compared with the control group ($t = 3.62$, $P < 0.001$).

- HDL/TC ratio: Fig. (5):

- In control group.

HDL/TC ratio ranged from 0.265-0.387 with a mean of 0.31 ± 0.04 .

- In MI offsprings group.

HDL/TC ratio ranged from 0.154-0.256 with a mean of 0.2 ± 0.02 , which was highly significantly decreased when compared with the control group ($t = 14.76$, $P < 0.001$).

- LDL/HDL ratio : Fig. (6):

- In control group.

LDL/HDL ratio ranged from 1.5-2.5 with a mean of 2 ± 0.33 .

- In MI offsprings group.

LDL/HDL ratio ranged from 2.3-4.4 with a mean of 3 ± 0.48 , which was highly significantly increased when compared with the control group ($t = 9.29$, $P < 0.001$).

- Triglyceride level (TG):

- In control group.

TG level ranged from 0.6-1.2 mmol/l with a mean of 0.8 ± 0.18 mmol/l.

- In MI offsprings group.

TG level ranged from 0.6-1.9 mmol/l with a mean of 1.1 ± 0.28 mmol/l, which was highly significantly increased when compared with the control group ($t = 4.56$, $P < 0.001$).

- Plasminogen activity:

- In control group

Plasminogen activity ranged from 80.3-108.9% with a mean of $95.5 \pm 8.53\%$.

- In MI offsprings group.

Plasminogen activity ranged from 78.8-109.2% with a mean of $90 \pm 8.74\%$, which was significantly decreased when compared with the control group ($t = 2.40$, $P < 0.05$).

- Lipoprotein (a) level: Table (7) Fig. 1.

- In control group.

LP (a) level ranged from 7-20 mg/dl with a mean of 14 ± 4.53 mg/dl.

- In MI offsprings group.

Lp (a) level ranged from 9-37 mg/dl with a mean of 25.2 ± 8.32 mg/dl, which was highly significantly increased when compared with the control group ($t = 5.68$, $P < 0.001$).

- Studied parameters in female offsprings as compared with male offsprings: Table 8.

No significant difference was found between female offsprings of MI patient when compared with male offsprings of MI patients with $P > 0.05$ in all parameters.

- Correlation between Lp (a) and clinical data: Table (9).

No significant correlation was found between Lp (a) and Age, Height, weight, Body Mass Index, SBP and DBP.

- Correlation between Lp (a) and other studied parameters: Table 10 and Fig. (7,8):

No significant correlation was found between Lp (a) and FBG, TC, HDL-C, LDL-C, HDL/TC, LDL/HDL, TG and plasminogen activity.

Table (1): Clinical Data of the Reference Group (Group I)

No.	Sex	Age (years)	Height (m)	Weight (kg)	Body Mass Index (kg/m ²)	Blood pressure (mmHg)	
						systolic	diastolic
1	M	20	1.70	70	24.2	120	80
2	F	21	1.50	55	24.4	120	80
3	M	25	1.75	75	24.5	130	80
4	F	18	1.58	62	24.9	130	80
5	M	28	1.78	82	25.9	120	80
6	F	30	1.72	80	27	120	70
7	M	19	1.65	66	24.2	130	90
8	F	23	1.45	48	22.8	110	70
9	M	22	1.60	65	25.4	120	80
10	F	20	1.62	63	24	120	80
11	M	30	1.73	75	25	140	90
12	F	15	1.50	55	24.4	110	60
13	M	17	1.63	60	25.6	120	90
14	F	26	1.70	71	24.6	110	70
15	M	15	1.55	60	25	130	90
16	F	17	1.40	44	22.4	130	90
17	M	35	1.85	87	25.4	120	80
18	F	20	1.65	65	23.9	120	80
19	M	33	1.71	75	25.6	125	85
20	F	32	1.55	60	25	120	80
Range		15-35	1.40-1.85	44-87	22.4-27	110-140	60-90
Mean		23.3	1.63	65.9	24.7	122.3	79.8
± SD		6.21	0.12	11.15	1.04	7.69	7.69

Table (2): Clinical Data of offsprings of Myocardial Infarction (MI) patients (Group II).

No.	Sex	Age (years)	Height (m)	Weight (kg)	Body Mass index (kg/m ²)	Blood pressure (mmHg)	
						systolic	diastolic
1	M	35	1.70	68	23.5	120	80
2	F	28	1.63	72	27.4	130	90
3	M	33	1.75	76	24.8	130	80
4	F	15	1.50	55	24.4	110	60
5	M	23	1.73	78	25	130	80
6	F	35	1.67	80	28.7	125	85
7	F	31	1.68	73	25.9	120	80
8	M	25	1.72	75	25.4	110	75
9	M	30	1.75	76	24.8	120	80
10	M	21	1.66	70	25.4	140	85
11	F	17	1.52	56	24.2	120	80
12	F	25	1.60	65	25.4	110	70
13	M	19	1.59	60	23.7	140	90
14	F	20	1.65	70	25.7	120	80
15	M	22	1.62	65	24.8	140	90
16	F	17	1.54	55	23.2	110	70
17	M	17	1.62	65	24.8	120	85
18	M	28	1.78	80	25.2	140	85
19	F	33	1.64	68	25.3	130	85
20	M	19	1.67	67	24	130	85
21	M	25	1.65	71	26	130	80
22	F	20	1.61	65	25	110	60
23	F	18	1.55	59	24.6	110	70
24	F	25	1.56	62	25.5	130	80
25	M	22	1.65	70	25.7	120	80
26	M	20	1.70	72	24.9	110	70
27	M	15	1.55	63	25.2	120	80
28	M	17	1.63	65	24.5	120	80

Cont.

No.	Sex	Age (years)	Height (m)	Weight (kg)	Body Mass Index (kg/m ²)	Blood pressure (mmHg)	
						systolic	diastolic
29	F	21	1.40	55	24.4	120	75
30	F	19	1.45	46	21.9	130	90
31	M	20	1.69	73	25.6	120	85
32	F	33	1.66	69	25	130	85
33	F	28	1.55	60	25	130	85
34	F	30	1.60	64	25	110	70
35	M	17	1.53	55	23.5	140	85
36	M	18	1.73	75	25	140	90
37	F	19	1.40	48	24.5	115	80
38	F	16	1.50	55	24.4	130	90
39	F	22	1.70	70	24.2	120	80
40	M	20	1.67	69	24.7	140	90
41	M	16	1.50	60	20.7	120	80
42	M	23	1.66	75	27.2	130	80
43	F	18	1.59	62	24.5	130	80
44	F	23	1.55	58	24.1	110	70
45	F	23	1.57	60	24.3	120	70
46	M	28	1.70	74	25.6	140	80
47	F	25	1.62	66	25.1	120	70
48	M	25	1.65	70	25.7	120	80
Range		15-35	1.40-1.78	46-80	21.9-28.7	110-140	60-90
Mean		22.9	1.62	65.9	25	124.2	79.8
± SD		5.60	0.09	8.10	1.12	9.91	7.43

Table (3): Clinical Data of the MI offsprings As Compared with the control Group.

Item	Control n = 20			MI offsprings n = 48				
	Range	Mean	±S.D	Range	Mean	± SD	t	p
Age (year)	15-35	23.3	6.21	15-35	22.9	5.60	- .26	> 0.05
Height (m)	1.40-1.85	1.63	0.12	1.40-1.78	1.62	0.09	- .52	> 0.05
Weight (kg)	44-87	65.9	11.15	46-80	65.9	8.10	0.02	> 0.05
Body Mass Index (kg/m ²)	22.4-27	24.7	1.04	21.9-28.7	25	1.12	1.2	> 0.05
Systolic blood pressure (mmHg)	110-140	122.3	7.69	110-140	124.2	9.91	0.77	> 0.05
Diastolic blood pressure (mmHg)	60-90	79.8	7.69	60-90	79.8	7.43	0.02	> 0.05

Table (4): The studied parameters in the Reference Group (Group I)

	FBG mmol/l	T.C mmol/l	HDL.C mmol/l	LDL.C mmol/l	HDL/ TC	LDL/ HDL	T.G mmol/l	plasminogen %	Lp (a) mg/dl
1	4.3	4.2	1.2	2.7	0.282	2.3	0.7	85.2	10
2	4.4	4.2	1.2	2.6	0.274	2.2	0.8	105.2	10
3	4.4	3.9	1.2	2.1	0.320	1.8	0.8	100.6	20
4	5.3	3.4	1.1	1.8	0.323	1.6	0.8	98.6	19
5	4.7	4.5	1.3	2.8	0.298	2.2	0.9	95.5	13
6	4.6	4.2	1.5	2.3	0.348	1.5	1.2	80.3	14
7	4.6	3.5	1.3	2	0.368	1.5	0.7	99.5	7
8	4.2	3.8	1.3	2.1	0.340	1.6	0.8	87.1	7
9	4.6	3.2	0.9	1.8	0.269	2	1.1	83.3	12
10	5	4.5	1.4	2.7	0.314	1.9	0.8	107.9	20
11	5	4.7	1.3	3	0.283	2.3	0.6	108.9	8
12	5.6	3.4	1.3	1.9	0.386	1.5	0.7	100.1	15
13	4.2	3.4	1	1.9	0.298	1.9	0.7	98.4	15
14	4.9	4.6	1.3	2.9	0.291	2.2	0.6	85.6	17
15	5.4	4.1	1.1	2.7	0.387	2.5	0.8	94.1	17
16	2.2	3.9	1.2	2	0.336	1.7	0.9	100.9	11
17	5.6	4.4	1.4	2.5	0.324	1.8	1.2	104.4	18
18	3.9	3.1	0.8	1.8	0.267	2.3	0.7	94.2	9
19	4.2	3.7	1.2	2.1	0.317	1.8	1	95.1	20
20	3.9	4	1.1	2.6	0.265	2.4	0.7	85.1	18
Range	3.9-5.6	3.1-4.7	0.8-1.5	1.8-3	0.265- 0.387	1.5-2.5	0.6-1.2	80.3-108.9	7-20
Mean	4.6	3.9	1.2	2.3	0.3	2	0.8	95.5	14
± SD	0.52	0.42	0.18	0.41	0.04	0.33	0.18	8.53	4.53

FBG: Fasting blood glucose.

T.C: Total cholesterol.

HDL-C: High density lipoprotein cholesterol.

LDL-C: Low density lipoprotein cholesterol.

T.G: Triglyceride.

Table (5): The Studied parameters In MI Offsprings Group (Group II)

	FBG mmol/l	T.C mmol/l	HDL.C mmol/l	LDL.C mmol/l	HDL/ TC	LDL/ HDL	T.G mmol/l	plasminogen %	Lp (a) mg/dl
1	4.7	6.5	1	4.4	0.160	4.4	1	93.2	14
2	5	5	1.1	2.8	0.228	2.5	1	80.8	32
3	5.1	5.4	1.1	3.4	0.195	3.1	1	94.8	11
4	4.1	3.9	0.8	2.4	0.200	3	0.9	82.7	25
5	4.7	5.3	1.1	2.8	0.204	2.5	1	106.7	37
6	5.8	6	1.2	4.3	0.200	3.6	1.4	86.8	9
7	5.6	5.4	1	3.8	0.181	3.8	1.2	91.2	31
8	5.6	4.4	1.1	2.5	0.241	2.3	1.1	84.1	24
9	5.3	4.9	0.8	2.7	0.157	3.4	1.2	90.5	26
10	3.9	5	0.8	3.1	0.156	3.9	1.2	96.5	35
11	5	3.1	0.7	1.9	0.217	2.7	0.6	90.4	12
12	4.4	4.7	0.8	3.1	0.177	3.9	1.4	83.8	16
13	4.5	4.7	0.9	2.7	0.189	3	1.1	100.2	9
14	3.5	4.4	0.9	2.6	0.20	2.9	0.8	80.1	14
15	5	5.2	1.2	2.8	0.225	2.3	1.6	87.8	19
16	4.5	4	0.9	2.4	0.231	2.7	0.9	105.7	33
17	4.4	4.7	1	2.7	0.202	2.7	1.2	102.4	33
18	6.1	5	0.9	3	0.175	3.3	1.2	85.6	36
19	4.4	4.7	0.8	2.7	0.175	3.4	1.1	97.6	28
29	4.4	3.5	0.6	2.1	0.185	3.5	0.7	90.6	25
21	4.3	5.4	1	3	0.192	3	1.7	97.4	18
22	4.4	4.8	1.1	2.8	0.230	2.5	1.1	81.4	30
23	4.1	4.2	0.9	2.2	0.209	2.4	1.3	97.6	34
24	4.6	4.7	0.9	3	0.192	3.3	1.4	101.6	29
25	4.4	4.3	0.8	2.5	0.180	3.1	1	90.9	22
26	4.4	4.2	0.7	2.5	0.173	3.6	0.9	105.1	19
27	3.9	4.5	0.8	2.3	0.177	2.9	1.4	83.9	30
28	4.2	4.4	0.9	2.5	0.216	2.8	1.3	80.2	35

Cont.

	FBG mmol/l	T.C mmol/l	HDL.C mmol/l	LDL.C mmol/l	HDL/ TC	LDL/ HDL	T.G mmol/l	plasminogen %	Lp (a) mg/dl
29	4.5	5.2	1.1	3.4	0.204	3	1.2	92.6	24
30	4.6	4.1	1	2.4	0.250	2.4	1.1	97.6	30
31	4.5	4.7	0.9	2.5	0.192	2.8	1.1	95.4	28
32	4.4	5.3	1	3	0.192	3	1.9	83.1	36
33	4.8	4.2	0.8	2.7	0.199	3.4	0.8	78.8	18
34	4.5	4.7	0.9	2.9	0.182	3.2	1.4	82.1	20
35	4.2	4.1	0.7	2.4	0.169	3.4	1	104.2	25
36	4.2	4.1	0.9	2.6	0.225	2.9	0.8	88.1	29
37	4.6	4.2	0.9	2.3	0.205	2.6	0.9	100.2	25
38	4.5	3.7	0.9	2.5	0.256	2.8	0.8	81.3	28
39	4.1	4.4	1	2.8	0.230	2.8	1	86.6	32
40	4.7	5.1	0.8	3	0.154	3.8	1.3	86.3	12
41	4.2	4.5	0.9	2.7	0.192	3	0.9	109.2	31
42	5.1	5.3	1.1	3	0.202	2.7	1	79.8	14
43	4.4	4	0.8	2.3	0.199	2.9	0.9	85.7	35
44	4.2	5	1.2	3	0.250	2.5	1.6	92.1	37
45	4.5	4	0.8	2.9	0.200	3.6	1.4	79.1	16
46	4.3	4.5	0.9	2.3	0.203	2.6	1.4	82.8	35
47	4	5.2	1	3.4	0.200	3.4	1.5	81.1	21
48	4.3	4.1	0.9	2.4	0.219	2.7	0.7	79.8	29
Range	3.9-6.1	3.1-6.5	0.6-1.2	1.9-4.4	0.154-0.256	2.3-4.4	0.6-1.9	78.8-109.2	9-37
Mean	4.6	4.6	0.9	2.8	0.2	3	1.1	90	25.2
± SD	0.48	0.63	0.14	0.49	0.02	0.48	0.28	8.74	8.32
Pvalue	> 0.05	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.05	< 0.001
Significance	N.S	H.S	H.S	H.S	H.S	H.S	H.S	S	H.S

N.S: Non significant.

S: Significant.

H.S: Highly significant.

Table (6): The Studied parameters In MI Offsprings As Compared With The Control Goup.

Items	Control Group n = 20			MI Offsprings Group n = 48				
	Range	Mean	± SD	Range	Mean	± SD	t	P value
FBG (mmol/)	3.9-5.6	4.6	0.52	3.9-6.1	4.6	0.48	- 0.75	> 0.05
TC (mmol/l)	3.1-4.7	3.9	0.42	3.1-6.5	4.6**	0.63	4.56	< 0.001
HDL-C (mmol/l)	0.8-1.5	1.2	0.18	0.6-1.2	0.9**	0.14	- 7.01	< 0.001
LDL-C (mmol/l)	1.8-3	2.3	0.41	1.9-4.4	2.8**	0.49	3.62	< 0.001
HDL/TC	0.265-0.387	0.3	0.04	0.154-0.256	0.2**	0.02	- 14.76	< 0.001
LDL/HDL	1.5-2.5	2	0.33	2.3-4.4	3**	0.48	9.29	< 0.001
TG (mmol/l)	0.5-1.2	0.8	0.18	0.6-1.9	1.1**	0.28	4.61	< 0.001
Plasminogen %	80.3-108.9	95.5	8.63	78.8-109.2	90*	8.74	- 2.40	< 0.05

* = Significant.

** = Highly Significant.

Table (7): Lp (a) Among MI Offsprings As Compared with The Control Group.

	No.	Range	Mean	$\pm$ SD	t	P value	Significance
Control	20	7-20	14	4.53	5.68	< 0.001	H.S
MI offsprings	48	9-37	25.2	8.32			

Table (8): The Studied parameters In Female Offsprings As compared with Male Offsprings.

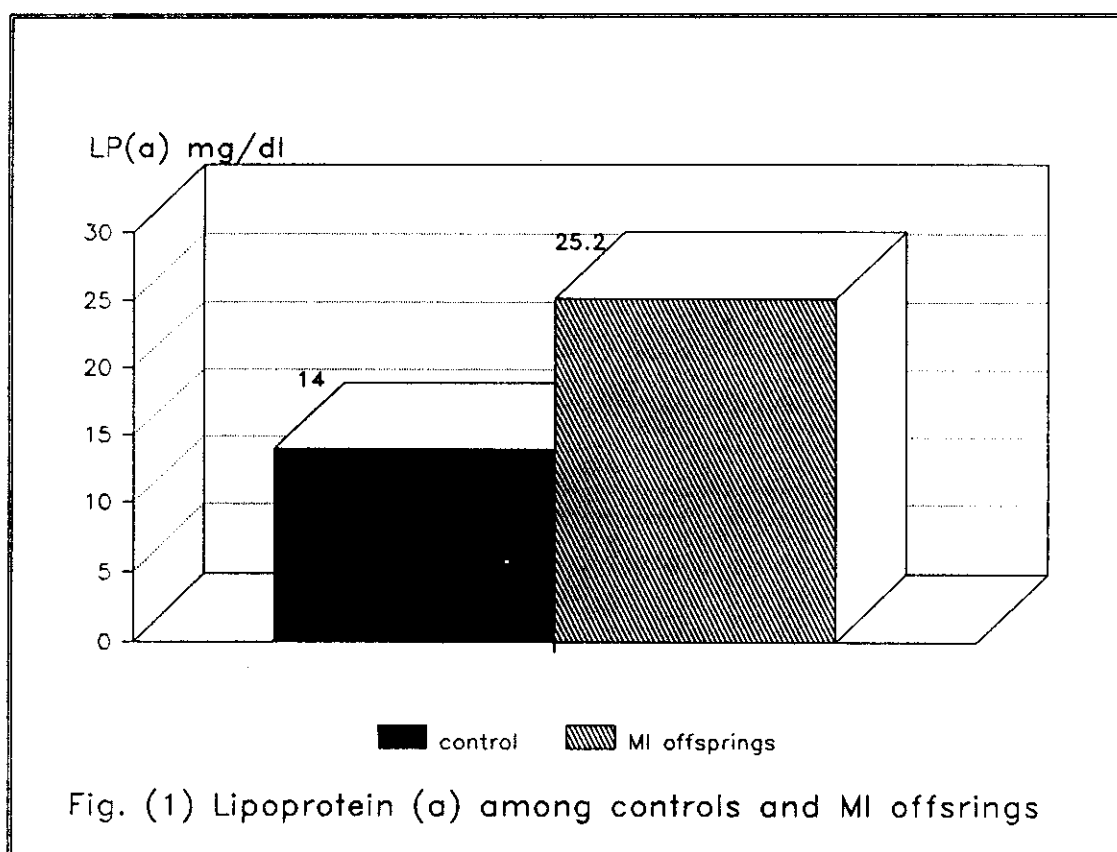
Items	Male offsprings			female offsprings group				
	n = 23			n = 25				
	Range	Mean	±SD	Range	Mean	±SD	t	p value
FBG (mmol/l)	3.9 - 6.1	4.6	0.53	4 - 5.8	4.6	0.50	0.31	> 0.05
TC (mmol/l)	3.5 - 6.5	4.8	0.62	3.1 - 6	4.5	0.60	1.27	> 0.05
HDL-C(mmol/l)	0.6 - 1.2	0.9	0.14	0.7 - 1.2	0.9	0.14	-0.98	> 0.05
LDL-C(mmol/l)	2.1 - 4.4	2.8	0.47	1.9 - 4.3	2.8	0.52	0.26	> 0.05
HDL/TC	0.154 - 0.241	0.19	0.02	0.172 - 0.256	0.2	0.02	-1.82	> 0.05
LDL/HDL	2.3 - 4.4	3	0.45	2.4 - 3.9	3	0.49	0.33	> 0.05
TG(mmol/l)	0.7 - 1.7	1.1	0.25	0.6 - 1.9	1.2	0.3	-0.53	> 0.05
Plasminogen%	97.9 - 109.2	92.8	8.70	78.8 - 105.7	87.3	8	1.29	> 0.05
Lp (a) mg/dl	9 - 37	24.4	8.60	9 - 37	26	8.7	0.67	> 0.05

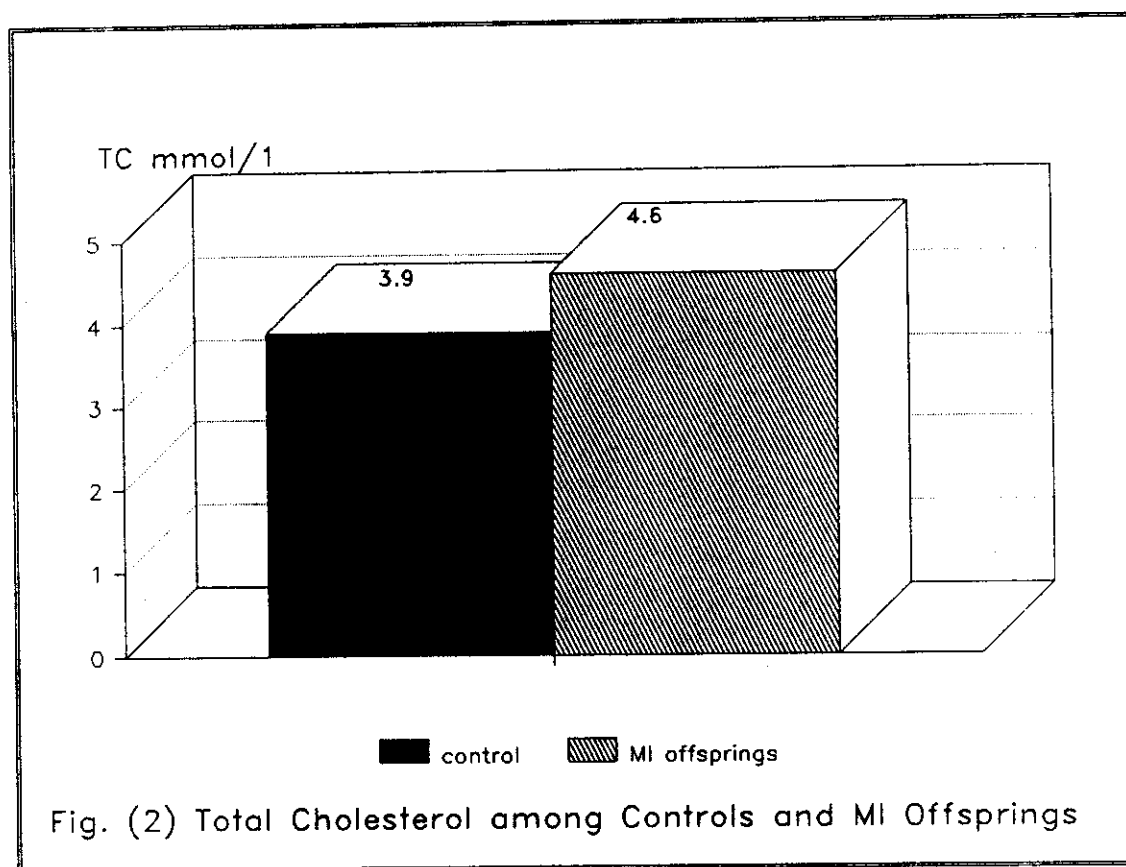
Table (9): Correlation Between Lp (a) And Clinical Data In Group I And Group II.

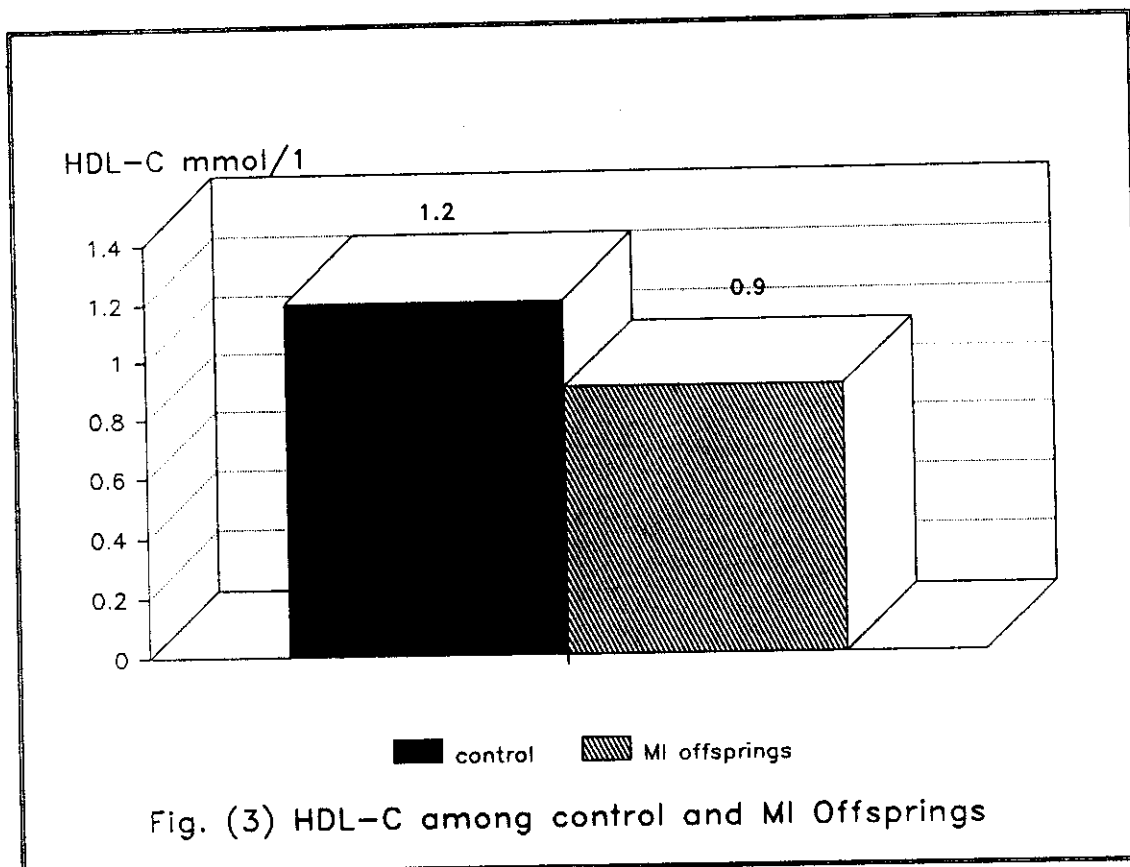
	LP (a)	Age	Height	Weight	B.M. Index	SBP	DBP
Control group		$r = 0.22$ $P > 0.05$	$r = 0.25$ $P > 0.05$	$r = 0.28$ $P > 0.05$	$r = 0.11$ $P > 0.05$	$r = 0.03$ $P > 0.05$	$r = 0.12$ $P > 0.05$
MI offsprings group		$R = 0.19$ $P > 0.05$	$r = 0.02$ $P > 0.05$	$r = 0.05$ $P > 0.05$	$r = 0.09$ $P > 0.05$	$r = 0.02$ $P > 0.05$	$r = 0.03$ $P > 0.05$

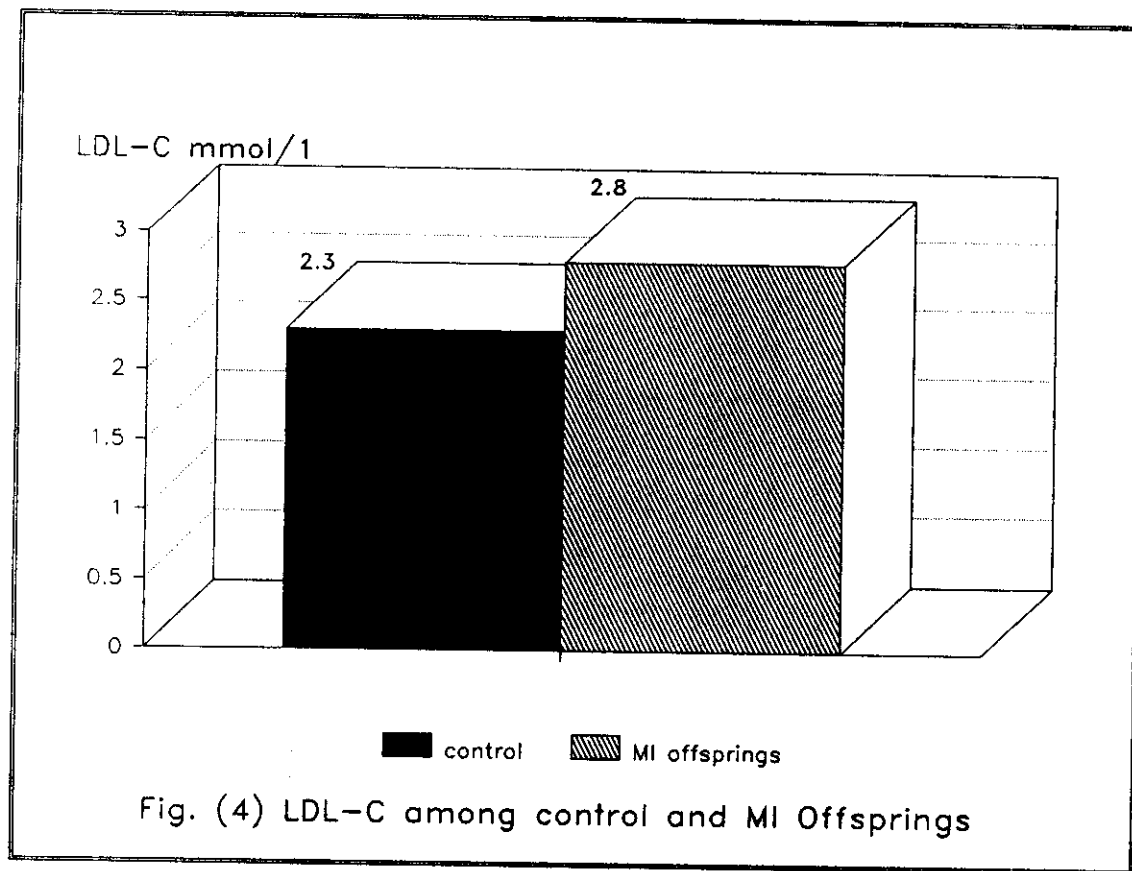
Table (10): Correlation Between Lp (a) And other Studied Parameters In The Group I And Group II.

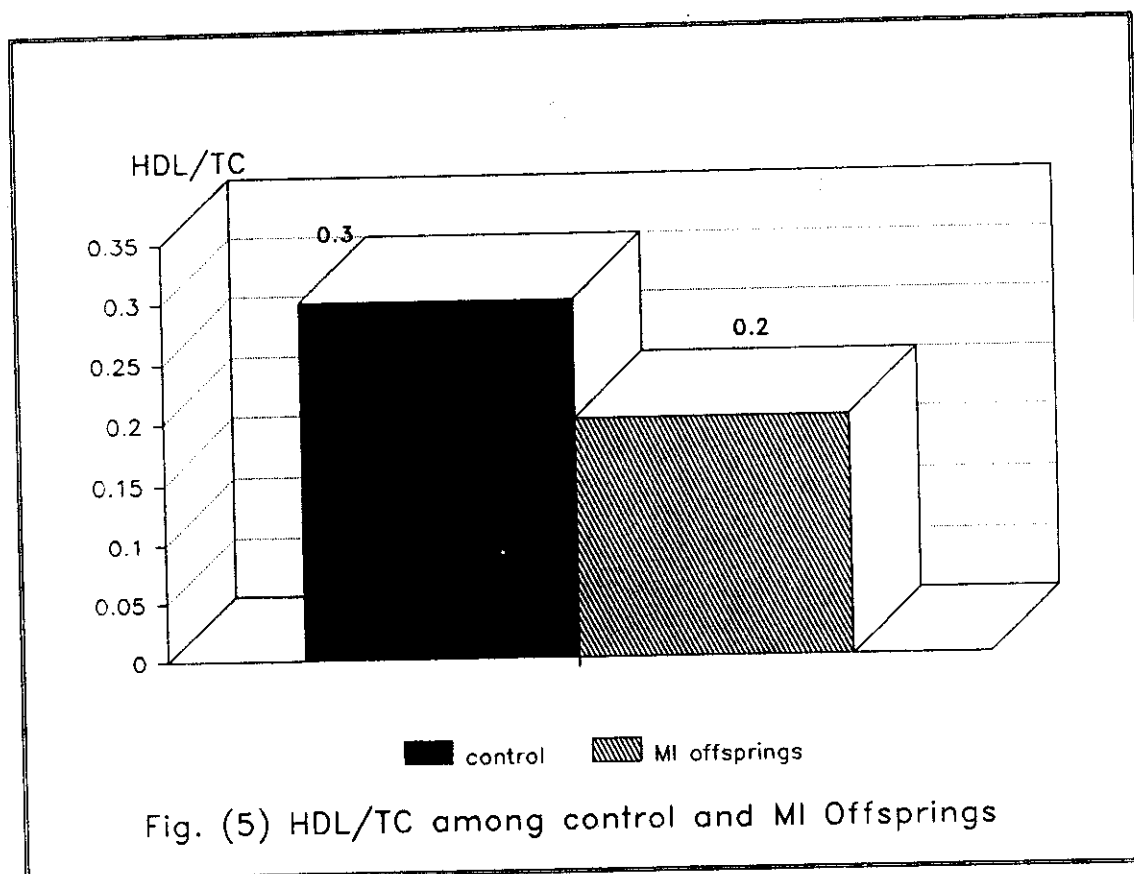
	LP (a)	FBG	TC	HDL-C	LDL-C	HDL/TC	LDL/HDL	TG	Plasminogen
Control group		$r = 0.124$ $P > 0.05$	$r = 0.124$ $P > 0.05$	$r = 0.074$ $P > 0.05$	$r = 0.074$ $P > 0.05$	$r = 0.104$ $P > 0.05$	$r = 0.130$ $P > 0.05$	$r = 0.222$ $P > 0.05$	$r = 0.072$ $P > 0.05$
MI offsprings group		$r = 0.260$ $P > 0.05$	$r = 0.087$ $P > 0.05$	$r = 0.87$ $P > 0.05$	$r = 0.241$ $P > 0.05$	$r = 0.256$ $P > 0.05$	$r = 0.211$ $P > 0.05$	$r = 0.091$ $P > 0.05$	$r = 0.095$ $P > 0.05$

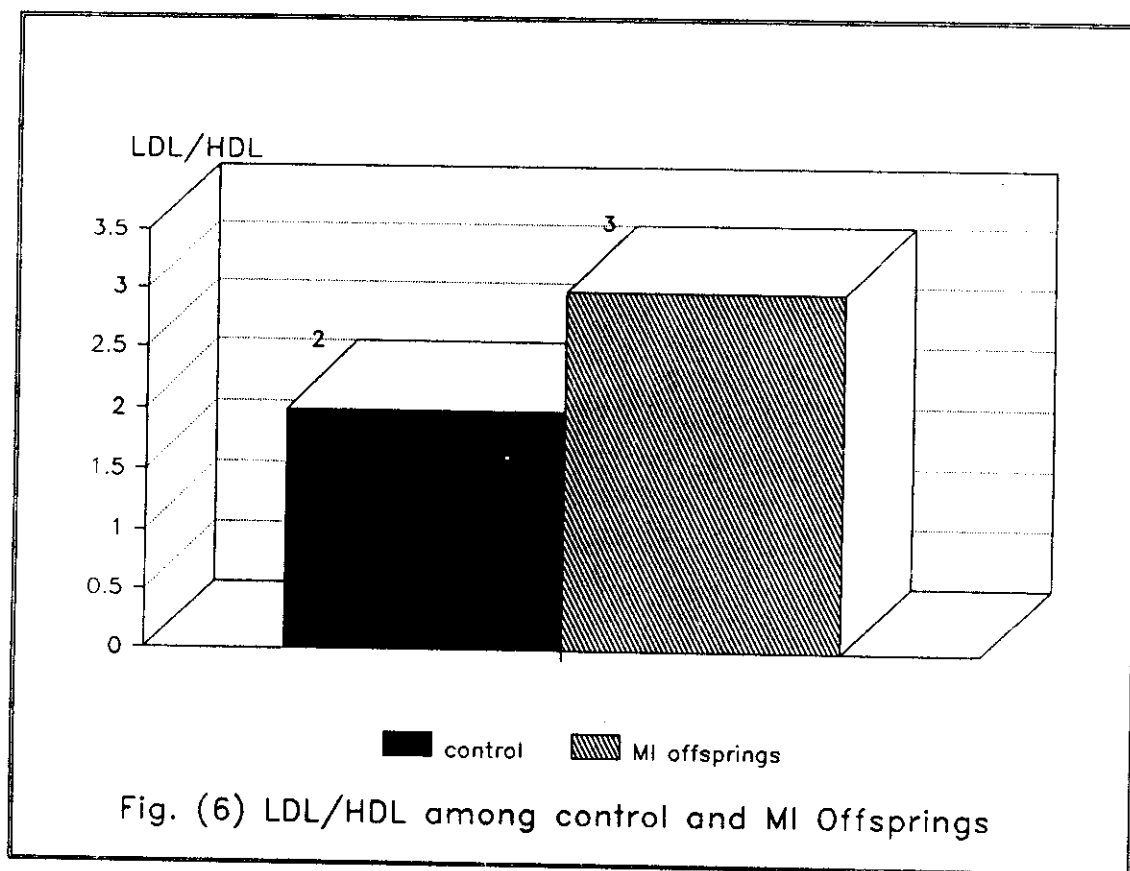












high density / total
lipoprotein / cholesterol

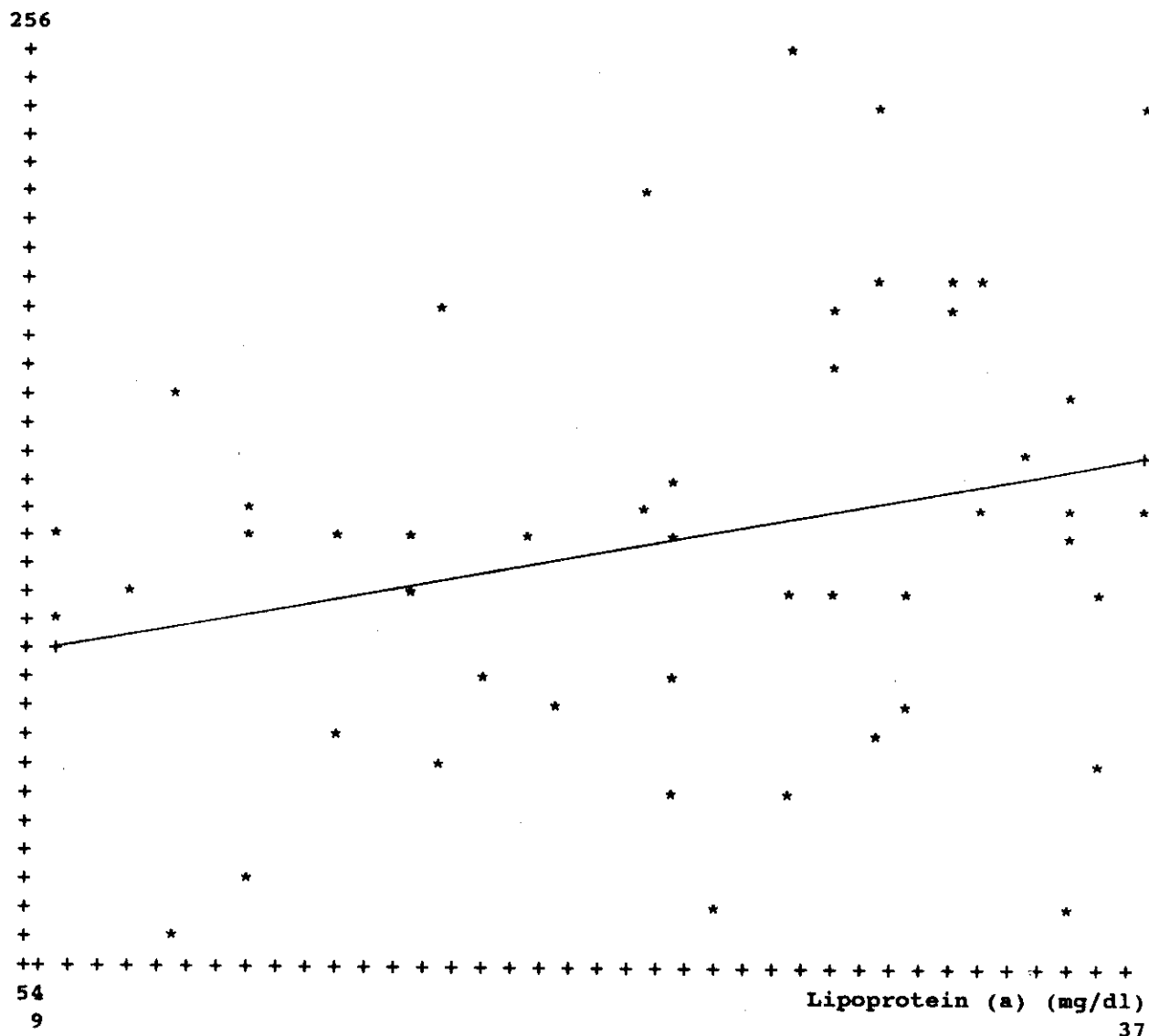


Fig. (2): Correlation between lipoprotein (a) and HDL/Tc
in MI offsprings group

REGRESSION EQUATION (Shown by + 's on scatterplot):

INTERCEPT= .1803949930459

SLOPE= 7.6634214186369E-04

$r = .2561$

($P > 0.05$) = NS

plasminogen (%)

109.2

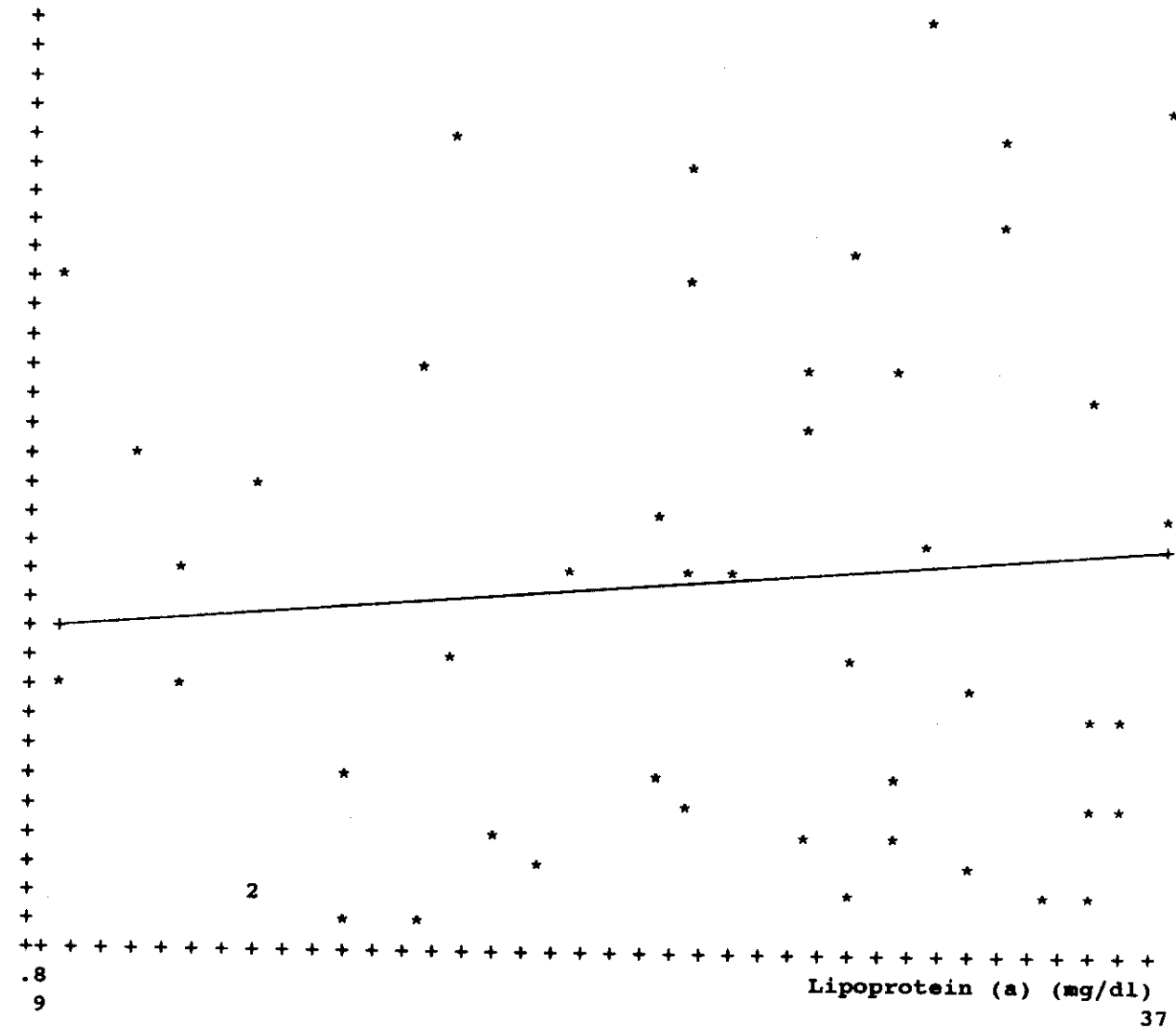


Fig. (8): Correlation between lipoprotein (a) and plasminogen in MI offsprings group

REGRESSION EQUATION (Shown by + 's on scatterplot):

INTERCEPT= 87.431589573332

SLOPE= .09998654044596

$r = .0952$
($P > 0.05$) = NS