RESULTS

Table (1): Shows the distribution of the studied sample according to the final diagnosis. The study included(500) persons; 350 (70 %) fresh new cases of pulmonary tuberculosis (group I),50 (10%) patients with other respiratory diseases (group II) which included C.O.P.D (15),pneumonia (12), suppurative lung diseases (11) pleural diseases (5), pulmonary neoplasm (5), pulmonary embolism (1) and interstitial pulmonary fibrosis "I.P.F."(1) ; 50 (10%) patients with non respiratory diseases (group III) which included heart diseases (5),liver diseases (II) typhoid fever (6), diabetes mellitus (5),renal diseases (4) blood diseases (3), G.I.T diseases (3), skin diseases (1), breast cancer (1) and rheumatoid disease (1);and 50 (10%) healthy subjects.

Table (2) and Fig (1): Shows the distribution of subjects according to sex in different groups. In tuberculous group; 226 were males (64.6 %) and 124 were females (35.4 %) with male to female ratio 1.8:1, in other respiratory diseases 35 were males and 15 were females with male to female ratio 2.3:1, in non respiratory diseases 26 were males and 24 were females with M/F= 1.1:1 and in healthy group 33 were males and 17 were females with M/F ratio = 1.9:1 .

Table (3) and Fig (2): Shows the distribution of subjects according to age in different groups. The main age of prevelence of the disease in the tuberculous group (group I) was the age

Table (6): Shows the mean and SD of glutaraldehyde test in different groups. Cases of G.T more than 20 minutes are excluded. The mean time in group I was 6.06 $\pm$ 3.65 minutes, in group II was 13.08 $\pm$ 6.66 minutes and in group III was 7.92 $\pm$ 6.72 minutes. All subjects in group IV were excluded because it had G.T more than 20 minutes

Table (7): Shows statistical comparison between mean times of glutaraldehyde test in group I and II, there was no significant difference (t-test= 0.682 and $P > 0.05$).

Table (8): Shows statistical comparison between mean times of glutaraldehyde test in group I and III, there was significant difference (t-test = 1.998 and $P < 0.05$).

Table (9): Shows statisitical comparison between mean times of G.T in group II and III, there was highly significant difference (t-test = 10.179 and $P < 0.005$).

Table (10): Shows the mean times and SD of positive glutaraldehyde test in different groups. The glutaraldehyde test in group I ranged from 1-10 minutes mith a mean value of 5.5$\pm$ 2.9 minutes. In group II the G.T ranged from 4-6 minutes with a mean value of 6$\pm$ 2.1 minutes. In group III the G.T ranged from 1-7 minutes with a mean value of 3.9 $\pm$ 2.4 minutes.

Table (11): Shows statistical comparison between mean time of positive glutaraldehyde test in tuberculous group (group I) and group II. There was no significant differences between the two mean times (t-test = 0.185 and $p > 0.05$).

Table (12): Shows statistical comparison between mean times of positive results of glutaraldehyde test in group I and group III. There was no significant differences between the two mean times (t-test = 1.131 and $P > 0.05$).

Table (13) : Shows statistical comparison between mean times of positive glutaraldehyde test in group II and group III. There was no significant differences between the two mean times (t-test= 1.436 and $P > 0.05$).

Fig (5): Shows the correlation between results of glutaraldeyde test and ESR in tuberculous group (group I). The correlation was statistically significant ($r=0.49$, and $P < 0.01$).

Table (14): Shows the relation between the results of glutaraldehyde test and tuberculin test in tuberculous group (group I). There was 276 cases out of 350 cases (78.9%) positive for both glutaraldehyde test and tuberculin test, 6 cases (1.7 %) negative for both tests, 13 cases (13.7 %) positive for GT but negative for tuberculin test and 55 cases (15.7 %) positive for tuberculin but negative for glutaraldehyde test, there was less than moderate

correlation between results of glutaraldehyde test and tuberculin test (association coefficient =0.4).

Table (15): Shows the relation between results of glutaraldehyde test and chest x-ray in group I. There was 59 cases (16.8 %) with minimal lesions of which 45 cases (76.3 %) gave positive glutaraldehyde test and 14 cases (23.7 %) gave negative reaction. Moderatly advanced lesions were observed in 176 cases (50.3 %) of which 152 cases (86.4 %) gave positive glutaraldehyde test and 24 cases (13.6 %) gave negative results. Far advanced lesions were observed in 115 cases (32.9 %), in 92 cases (80 %) glutaraldehyde test was positive (i.e ≤ 10 min) and 23 cases (20 %) the test was negative (i.e > 10 min). Statistically there was very weak correlation between results of glutaraldehyde test and chest x-ray changes (contigency coefficient = 0.1).

Table (16): Shows statistical assessment of glutaraldehyde test in the diagnosis of pulmonary tuberculosis. The fraction of patients with pulmonary tuberculosis detected by positive glutaraldehyde test (sensitivity) was (82.6 %) and the fraction of patients without tuberculosis who were correctly identified by negative glutaraldehyde test (specificity) was 91.3 %. The predictive value of a positive glutaraldehyde test was 95.7 % and the predictive value of a negative glutaraldehyde test was 69.2 %. The efficiency of the glutaraldehyde test was 85.5 %.

Table (1) Distribution of the studied subjects according to the final diagnosis

Final diagnosis	No	%
Pulmonary T.B. (Group I)	350	70
Other respiratory diseases (Group II)	50	10
- C.O.P.D	15	30
- Pneumonia	12	24
- Suppurative diseases	11	22
- Pleural diseases	5	10
- Pulm. neoplasm	5	10
- Pulm. embolism	1	2
- I.P.F	1	2
Non respiratory diseases (Group III)	50	10
- Heart diseases	15	30
- Liver diseases	11	22
- Typhoid fever	6	12
- Diabetes mellitus	5	10
- Renal diseases	4	8
- Blood diseases	3	6
- G.I.T diseases	1	2
- Skin diseases	1	2
- Breast cancer	1	2
- Rheumatoid disease		
Healthy subjects (Group IV)	50	10

Table (2) : Distribution of subjects according to sex in different groups

Group \ Sex	Male		Female	
	No	%	No	%
I (n = 350)	226	64.6	124	35.4
II (n = 50)	35	70	15	30
III (n = 50)	26	52	24	48
IV (n = 50)	33	66	17	34
Total	320	64	180	36

Table (3) Distribution of subjects according to age in different groups

Age \ Group	I		II		III		IV	
	No	%	No	%	No	%	No	%
10-	26	7.4	1	2	8	16	1	2
20-	107	30.6	12	24	2	4	11	22
30-	107	30.6	13	26	8	16	19	38
40-	70	20	8	16	10	20	9	18
50-	27	7.7	9	18	10	20	7	14
60 -	13	3.7	7	14	12	24	3	6
Total	350	100	50	100	50	100	50	100
Range	13-71		15-69		11-65		17-65	
Mean	34 .28		40 .26		43 .12		37 .98	
S.D	11 .89		13 .59		16 .80		11 .58	

Fig (1): Distribution of subjects according to sex in different groups

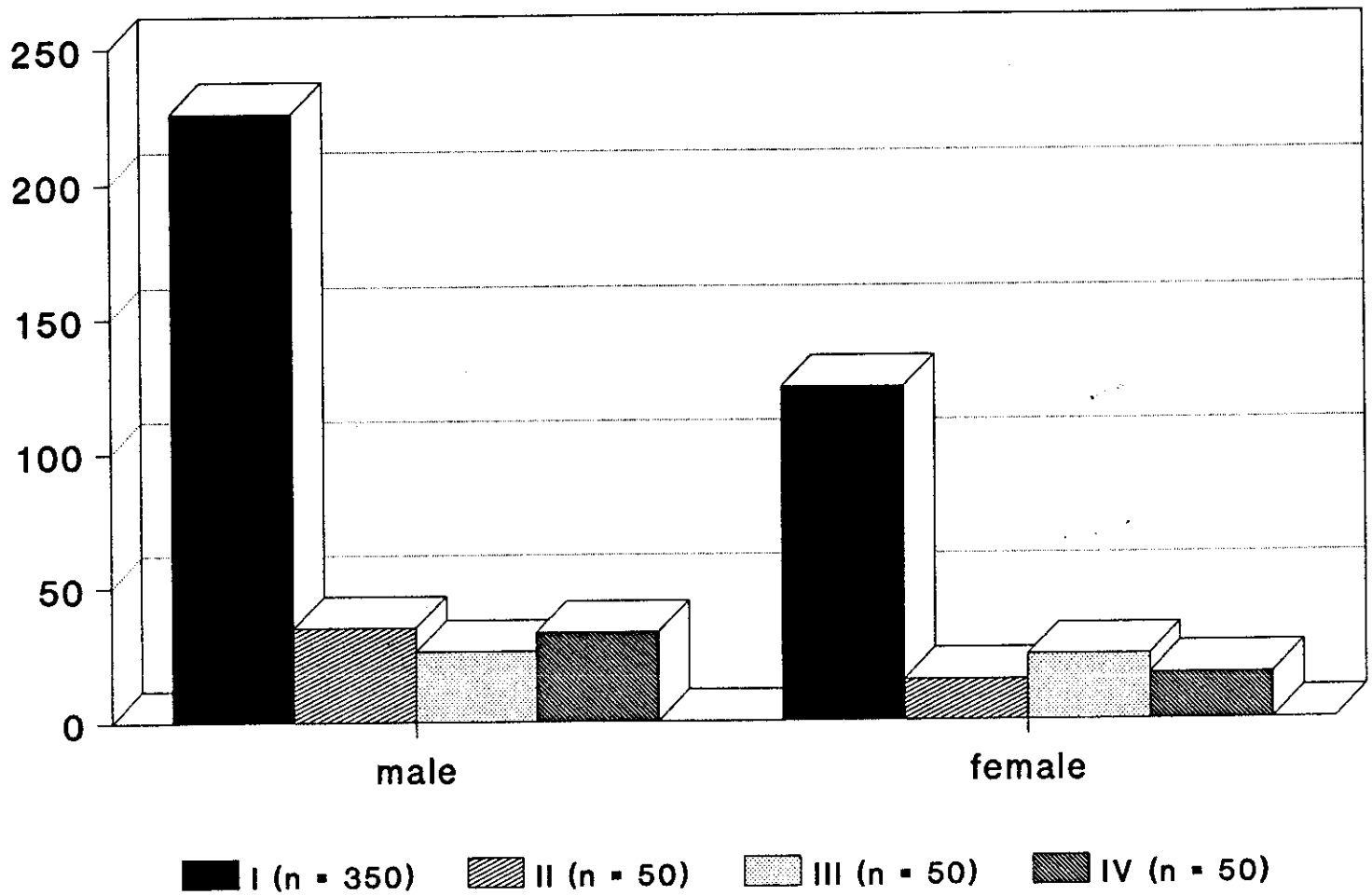


Fig (2): Distribution of subjects according to age in different groups

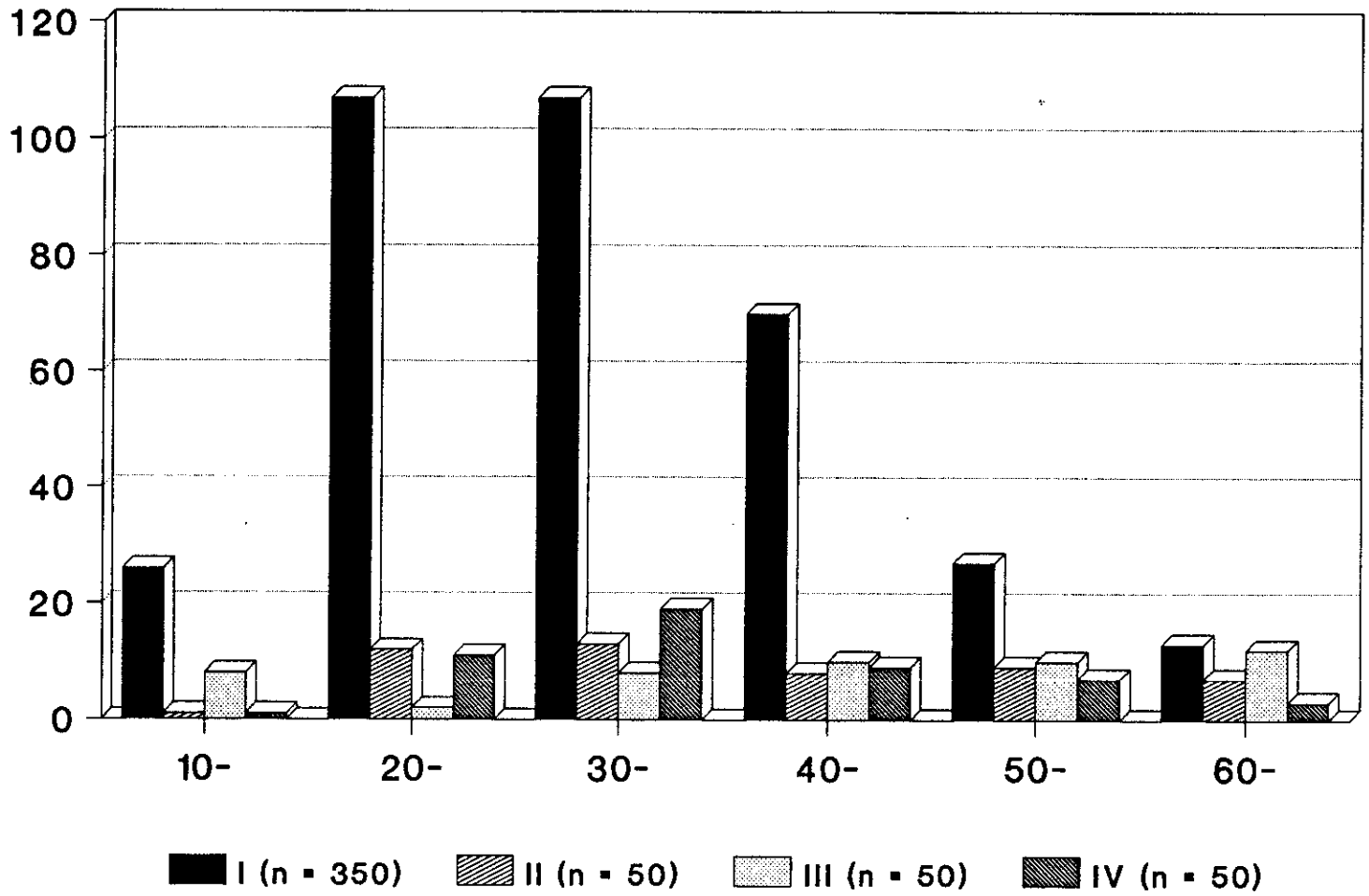


Table (4): Results of glutaraldehyde test among different groups:

Group	positive		negative	
	no	%	no	%
I (n =350)	289	82.6	61	17.4
II (n = 50)	5	10	45	90
III (n = 50)	8	16	42	84
IV (n = 50)	0	0	50	100
Total	302	60.4	198	39.6

positive G. T =10 minutes or less

Table (5): Distribution of the results of glutaraldehyde test in minutes among different groups.

Group	0 -10		>10 - 20		>20	
	No	%	No	%	No	%
I (n = 350)	289	82.6	15	4.3	46	13.1
II (n = 50)	5	10	7	14	38	76
III (n = 50)	8	16	4	8	38	76
IV (n = 50)	0	0	0	0	50	100
Total	302	60.4	26	5.2	172	34.4

Fig (3): Results of glutaraldehyde test among different groups.

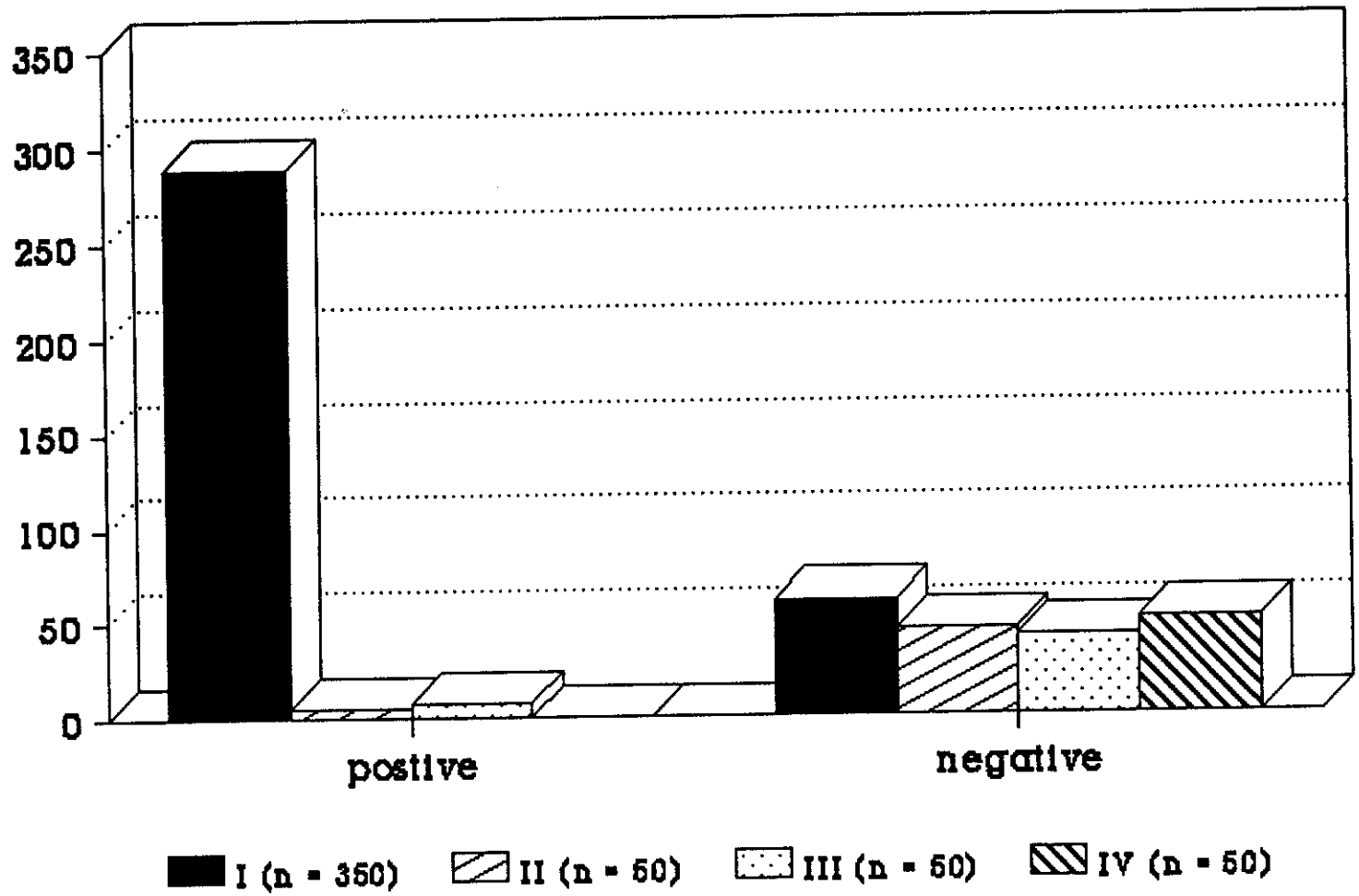


Table (6): Mean times and S.D of glutaraldehyde test in different groups.

	Group I	Group II	Group III
n	304	12	12
$\overline{X}$	6.06	13.08	7.92
S.D	3.65	6.66	6.72

Cases of G.T more than 20 mintes were excluded

Table (7): Statistical Comparison between mean times of glutaraldehyde test in group I and II.

	Group I	Group II
n	304	12
$\overline{X}$	6.06	13.08
S.D	3.65	6.66

t-test = 0.682

p > 005 (non significant)

Table (8): Statistical Comparison between mean times of G.T in group I and III

	Group I	Group III
n	304	12
$\overline{X}$	6.06	7.92
S.D	3.65	6.72

t- test = 1.998

P <0.05 significant

Table (9): Statistical comparison bteween mean times of G.T in group II and III

	Group II	Group III
n	12	12
$\overline{X}$	13.08	7.92
S.D	6.66	6.72

t- test = 10. 179

P < 0.005 (highly significant)

Table (10): Mean times and S.D of positive glutaraldehyde test in different groups

	Group 1 n =289	Group 11 n = 5	Group 111 n = 8
Range	1-10 min	4 - 6 min	1 -7 min
$\overline{X}$	5 . 5	6	3.9
S .D	2 . 9	2 . 1	2.4

positive G.T =10 minutes or less

Toble (11): statistical comparison between mean times of positive G.T in group I and II.

	Group I	Group II
n	289	5
$\overline{X}$	5.5	6
S.D	2.9	2.1

t-test =0.185

p> 0.05 (non significant)

Table (12) : Statistcal comparison between mean times of positive G.T in group I and III

	Group I	Group III
n	289	8
$\overline{X}$	5.5	3.9
S.D	2.9	2.4

t-test = 1.131

P > 0.05 (non significant)

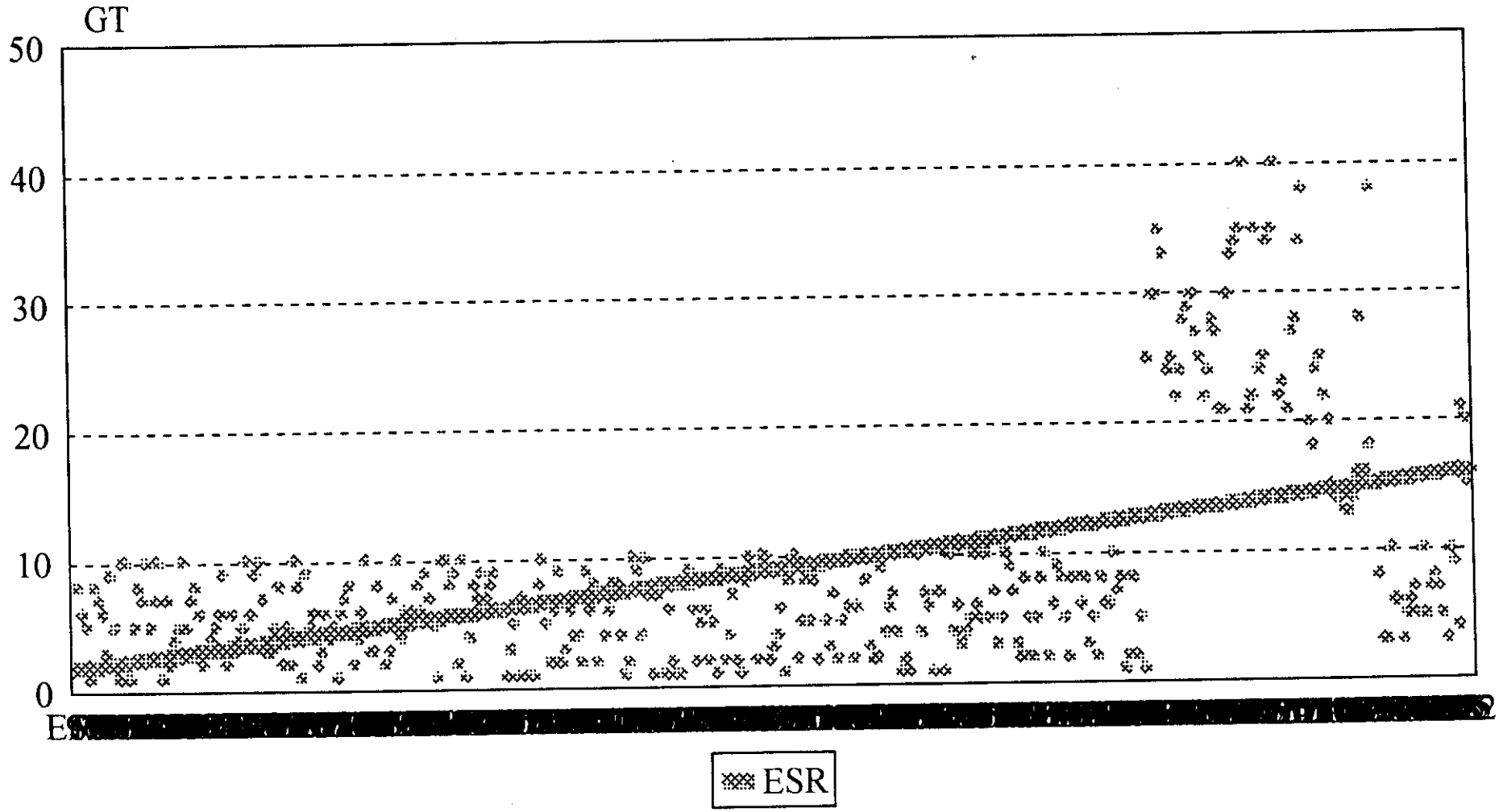
Table (13): Stafistical Comparison between mean times of positive glutaraldehyde test in group II and III.

	Group II	Group III
n	5	8
$\overline{X}$	6	3.9
S.D	2.1	2.4

t-test = 1.436

P > 0.05 (non significant)

Fig (5): Correlation between results of glutaraldehyde test and ESR in group I.



Correlation coefficient (r) = 0.4922

P < 0.01 (significant).

Table (14): The relation between the results of glutaraldehyde test and tuberculin test in group I

G. T / T.T	+ ve		- ve		Total	
	No	%	No	%	No	%
+ ve	276	83.4	55	16.6	331	100
- ve	13	68.4	6	31.6	19	100
Total	289	82.6	61	17.4	350	100

Association coefficent = 0.4

Table (15): The relation between the results of G.T and chest x-ray in group I

G.T / x- ray	+ve		-ve	
	No	%	No	%
Min (n = 59)	45	76.3	14	23.7
Mod. (n = 176)	152	86.4	24	13.6
Far adv. (n = 115)	92	80	23	20
Total (n = 350)	289	82.6	61	17.4

Contigency coefficient = 0.1

Table (16): Statistical asessment of G. T in diagnosis of pulmonary tuberculosis

G.T	T.B present	No T.B
+ve	289 (TP)	13 (FP)
-ve	61 (FN)	137 (TN)
Total	350	150

TP = True positive FP = False positive

FN = False negative TN = True negative

$$\text{* Sensitivity} = \frac{TP}{TP+FN} = 82.6\ \%$$

$$\text{* Specificity} = \frac{TN}{TN+FP} = 91.3\%$$

$$\text{*Positive predictive value (PPV)} = \frac{TP}{TP+FP} = 95.7\%$$

$$\text{* Negative predictive value (NPV)} = \frac{TN}{TN+FN} = 69.2\ \%$$

$$\text{* Efficiency} = \frac{TP+TN}{TP+TN+FP+FN} = 85.5\ \%$$