Table (1): Age distribution in the studied groups

	RA patients		Control group	
	Min.	**Max.**	**Min.**	**Max.**
Range / yrs	30	65	27	65
Number	60		40	
$\overline{X}$	46		45.4	
± SD	11.3		10.2	
t	0.28			
P	> 0.05			

RA = Rheumatoid arthritis.

$\overline{X}$ = Mean.

± SD = Standard deviation.

t = Student –test value.

P = Probability of error.

Table (2): Sex distribution in the studied groups

group / sex	RA patients		Control group	
	N	**%**	**N**	**%**
female	45	75	28	70
male	15	25	12	30
X^2	0.3			
P	> 0.05			

X^2 = Chi – square value.

Pie–chart (1) Sex distribution in the studied group

25%
75%

30%
70%

RA patients

Female
Male
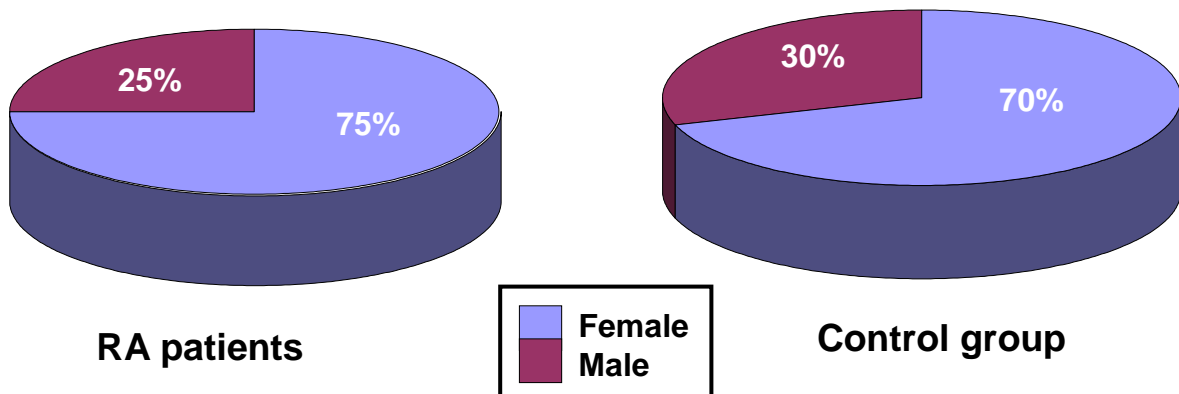
Control group

Table (3): Comparison between frequency of anti-CCP antibodies in the studied groups.

	Anti-CCP + ve		Anti-CCP - ve		X^2	P
	Number	%	Number	%		
RA patients	46	76.7	14	23.3	46.6	<0.001
Heal thy control	2	5.0	38	95		

Pie-chart (2) the frequency of anti-CCP antibodies in the studied groups

23.3%

76.7%

5%

95%

RA patients

Control group

☐ **Anti-CCP +Ve**
☐ **Anti-CCP -Ve**
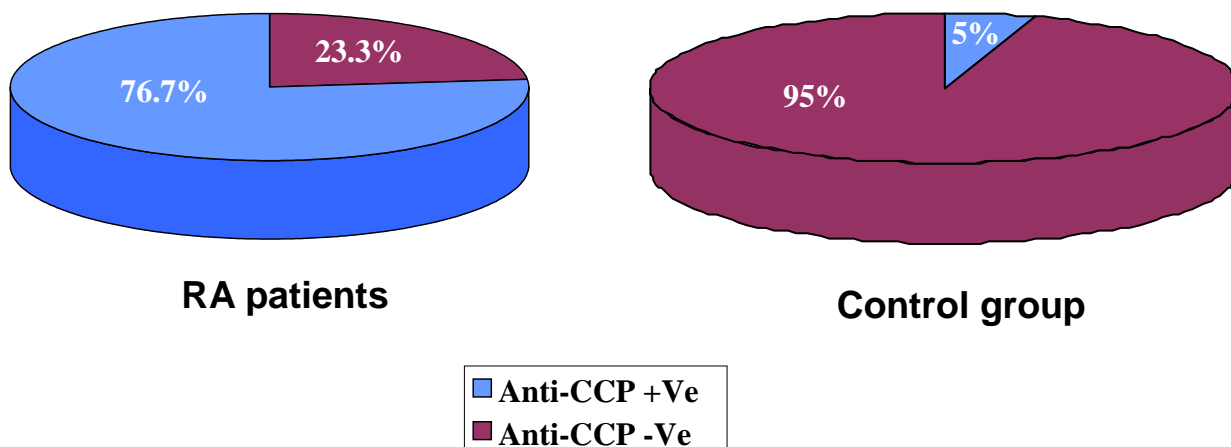
Table (4): Comparison between the mean of anti–CCP antibodies titre in studied groups.

	N	X⁻	± SD	t	P
RA patients	60	151.5	91.85	5.03	<0.001
Healthy controls	40	18.1	0.72		

Histogram (1): the mean of anti–CCP antibodies titre in studied groups.
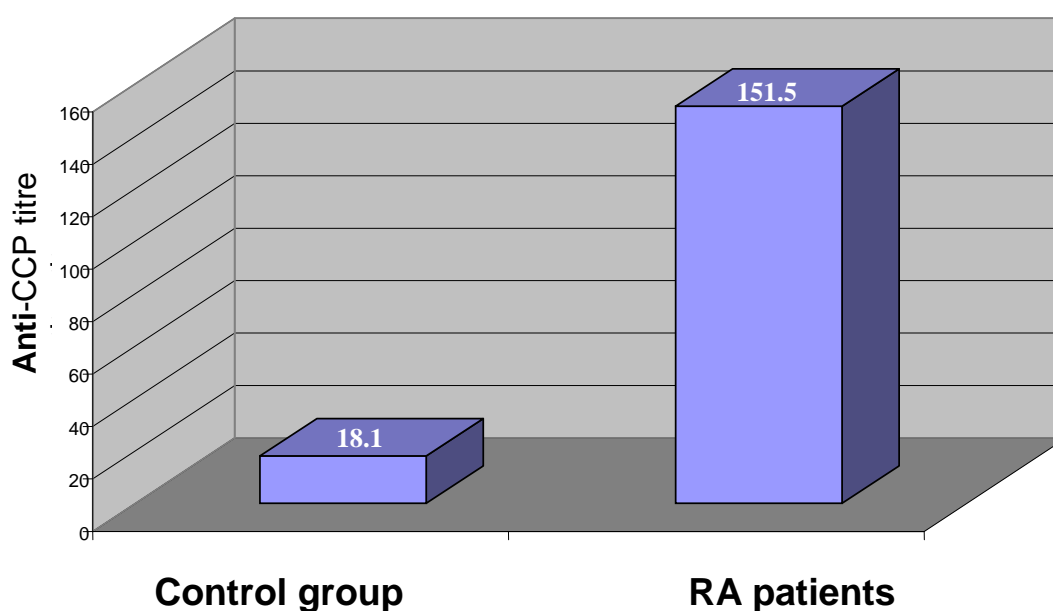

Table (5): Comparison between the association of anti – CCP antibodies and seropositivity in the rheumatoid arthritis patients.

	Sero + Ve RA		Sero – Ve RA		X²	P
	N	%	N	%		
Anti – CCP + ve RA	40	66.7%	6	10%	5.96	<0.01
Anti – CCP – ve RA	8	13.3%	6	10%		

Table (6): Comparison between the anti-CCP antibodies titre in RA patients in relation to the onset of disease

Onset of disease	early onset < 2 years			late onset > 2 years			t	P
	N	X⁻	+SD	N	X⁻	+SD		
Anti-CCP + ve	20	126.8	17.27	26	242.38	30.63	16.2	< 0.001

Histogram (2): the mean of anti – CCP antibodies titre in RA patients in relation to the onset of disease
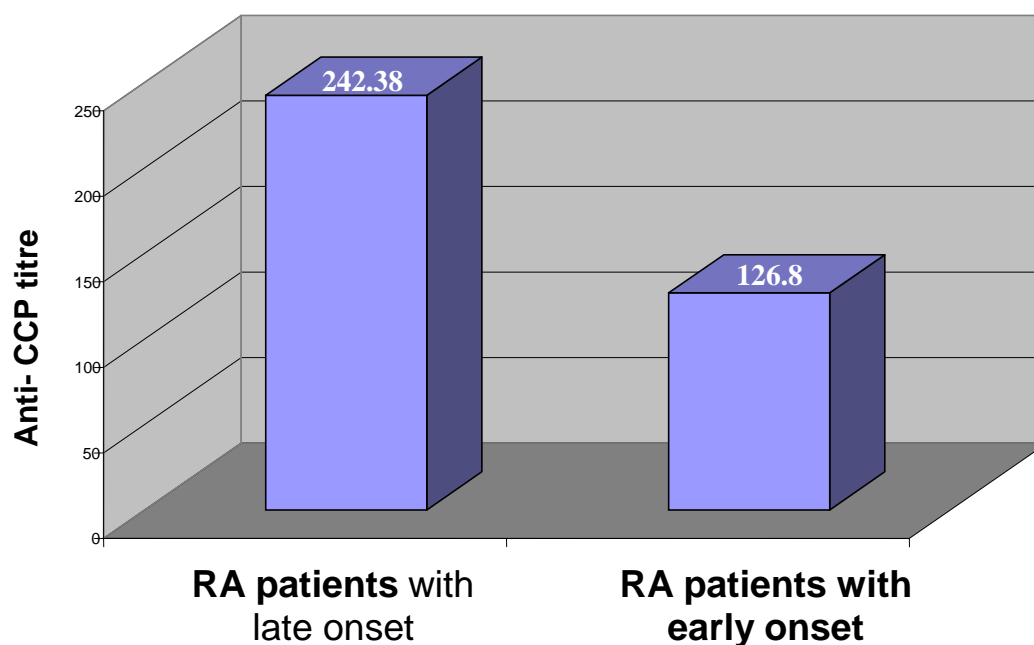
Results **Table (7):** Comparison between anti-CCP +ve and anti-CCP - ve RA patients according to disease parameters.

	Anti-CCP +ve n=46		Anti-CCP – ve n=14		T	P
	$\overline{X}^-$	$\pm$ SD	$\overline{X}^-$	$\pm$ SD		
Age / ys	48	10.3	46.4	9.5	0.54	>0.05
Disease duration	7.14	5.07	8.04	4.8	0.61	>0.05
MS / min	77.8	42.7	30	11.2	6.86	<0.001
GS / mmHg	71.9	34.9	145	50.6	5.05	<0.001
A I	32.3	7.9	16.8	11	4.9	<0.001
VAS	7.4	1.85	3.6	2.1	6.09	<0.001
MDGA	3.16	0.42	2.07	0.74	3.63	<0.001
ESR	71.2	19.96	40.1	17	5.75	<0.001
Hb%	10.7	7.4	13.1	4.3	1.91	> 0.05
RF	37.2	8.6	20.7	3.5	10.47	<0.001

MS / min = morning stiffness.

GS / mmHg = Mean grip strength.

A I = Articular index.

VAS = Visual analogue scale.

MDGA = Mean disease grading activity.

ESR = Erythrocyte sedimentation rate.

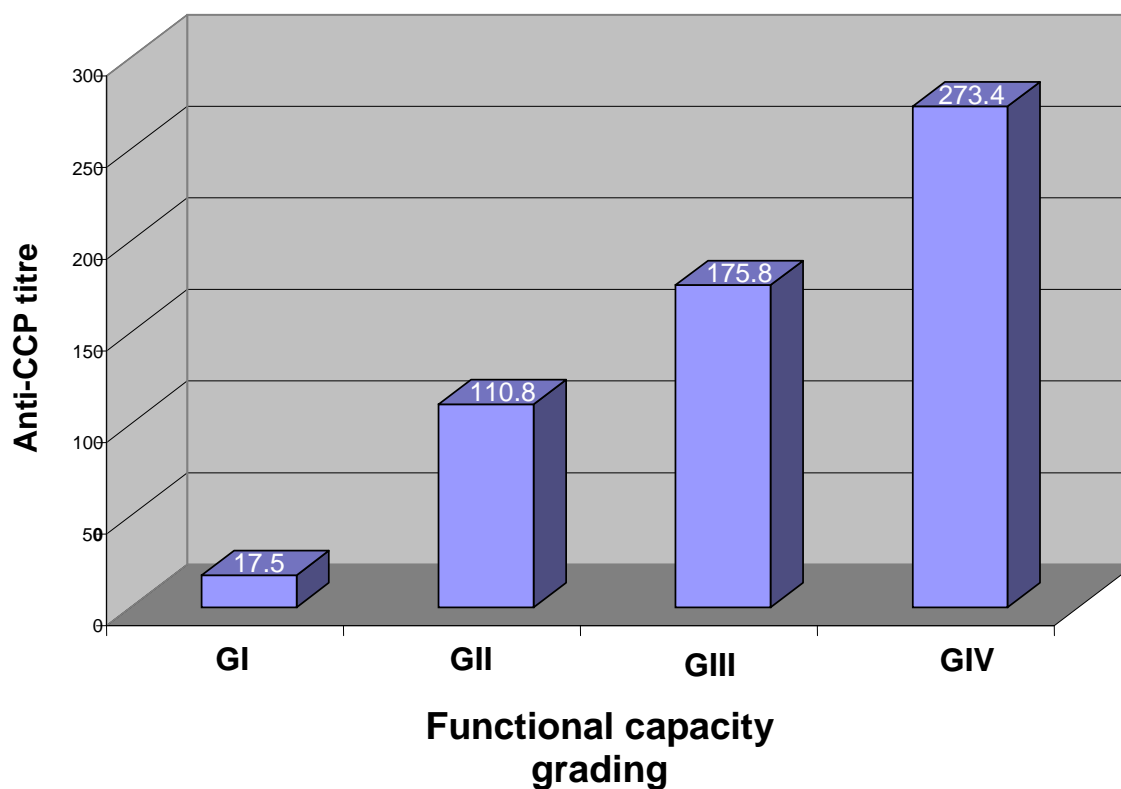Hb % = Haemoglobin percent.

RF = Rheumatiod factor.

N = Number.

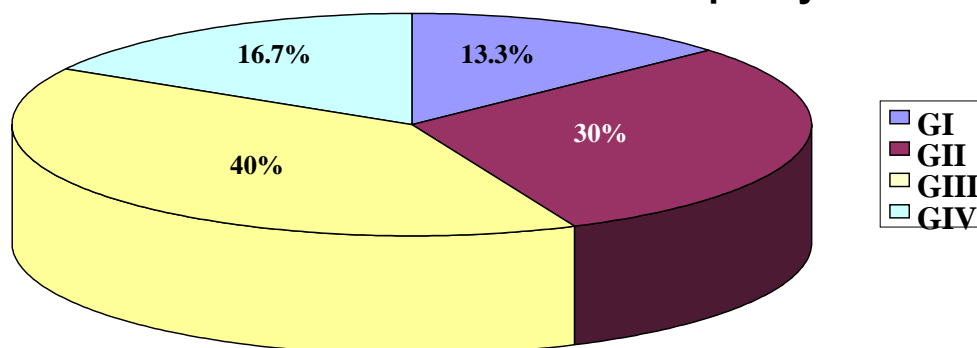**Table (8):** Comparison between the titre of anti-CCP in RA patients in relation to their functional capacity.

Grade	G I			G II			G III			G IV		
	N	**X⁻**	**± SD**	**N**	**X⁻**	**± SD**	**N**	**X⁻**	**± SD**	**N**	**X⁻**	**± SD**
Anti-CCP titre	8	17.5	1.1	18	110.8	36.9	24	175.8	47.3	10	273.4	13.6
F	38.47											
P	<0.001											

F=Fisher value of one way analysis of variance (ANOVA) test.

Histogram (3): the mean titre of anti−CCP antibodies in RA patients in relation to their functional capacity
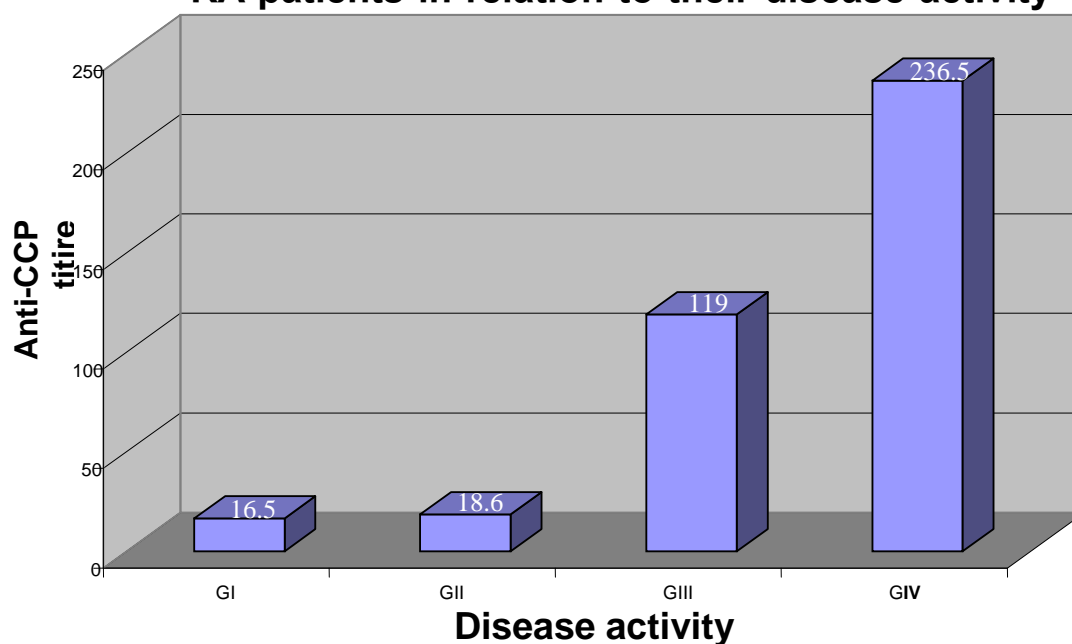
Pie−chart (3): the percentile ratio of RA patients in relation to their functional capacity

Table (9): Comparison between the titre of anti-CCP in RA patients in relation to their disease activity.

Grade	G I			G II			G III			G IV		
	N	X⁻	± SD	N	X⁻	± SD	N	X⁻	± SD	N	X⁻	± SD
Anti-CCP titre	4	16.5	0.57	6	18.6	0.54	34	119	37.8	16	236.5	18.1
F	28.49											
P	<0.001											

Histogram (4): the mean titre of anti−CCP antibodies in RA patients in relation to their disease activity

Pie-chart (4): the percentile ratio of RA patients in relation to their disease activity
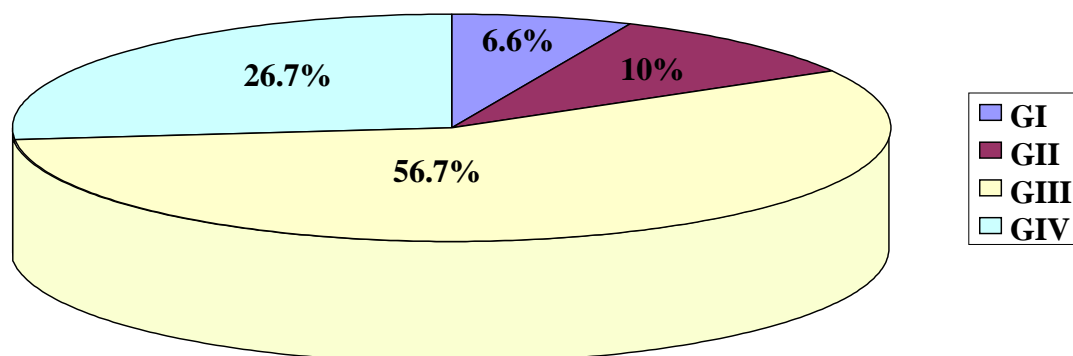

6.6%
10%
26.7%
56.7%

- GI
- GII
- GIII
- GIV

Table (10): Comparison between the titre of anti-CCP in RA patients in relation to their radiological grading of severity.

Grade	G I			G II			G III			G IV		
	N	X⁻	+ SD	N	X⁻	+ SD	N	X⁻	+ SD	N	X⁻	+ SD
Anti-CCP titre	10	17.8	1.22	26	115.3	41.73	12	222	17.4	12	270.8	13.7
F	59.43											
P	<0.001											

Histogram (5): the mean titre of anti-CCP antibodies in RA patients in relation to their radiological grading of severity.

270
222
115.3
17.8

GI GII GIII GIV

Anti-CCP titre

Radiological grading of severity
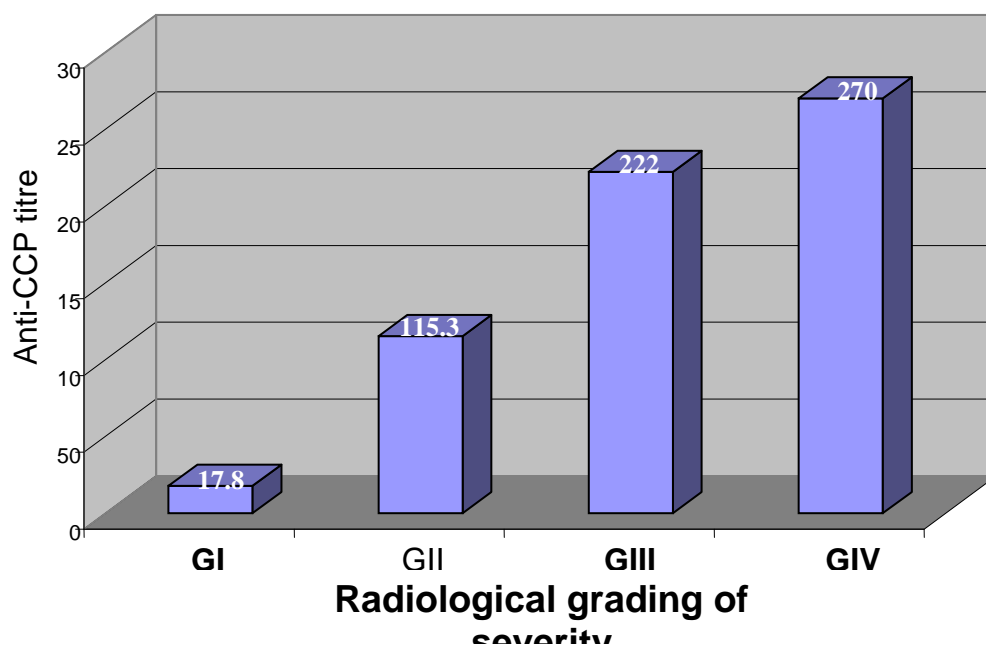
**Pie-chart (5): the percentile ratio of RA patients
in relation to their radiological grading of severity**
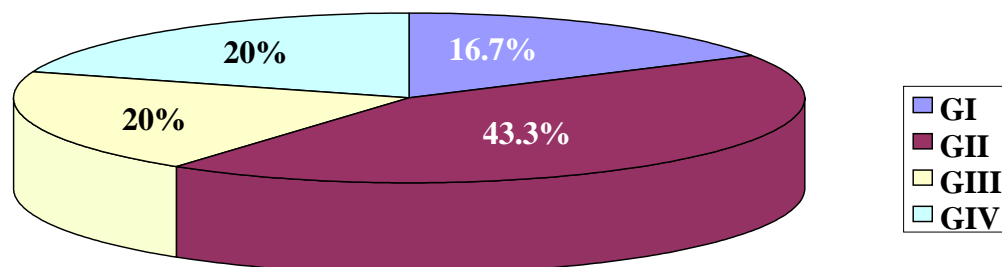

Table (11): Sensitivity specificity, positive predictive and negative predictive values of anti-CCP antibodies and RF in RA patients.

Serological marker	Sensitivity %	Specificity %	PPV%	NPV%
Anti-CCP	76.7 %	95 %	95.8 %	73 %
RF	80 %	87.5 %	90.5 %	74.4 %
Anti-CCP + RF	63.3 %	97.5 %	97.4 %	63.9 %

Table (12): Correlation coefficient between the clinical and laboratory variables of RA patients in relation to their anti-CCP antibodies titre.

Anti-CCP titre Variables	(r)	P
Age	0.72	< 0.001
Disease duration	0.76	< 0.001
M.S	0.74	< 0.001
AI	0.82	< 0.001
GS	-0.83	< 0.001
VAS	0.82	< 0.001
MDGA	0.74	< 0.001
ESR	0.84	< 0.001
RF	0.64	< 0.001
Hb %	-0.48	< 0.05

Critical value of (r) = 0.31