The Role of Circulating Immune Complexes in the Pathogenesis of the Ischemic Heart Disease

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ABSTRACT:
BACKGROUND:
Circulating immune complexes (CICs) were found to have an effect on the pathogenesis and prognosis of ischemic heart disease (IHD).
METHODS:
A total of 24 patients, 13 as a patient group with IHD (10 males and 3 females), and 11 healthy control group (6males and 5 females), for all the level of CICs was detected by platelets aggregation test (1).
RESULTS:
The results showed that all patients with IHD had positive platelets test, while only 4control group had a positive results.
CONCLUSION:
This study showed that there was significant raise in the level of CICs in the IHD and it might play a role in it's development.
KEY WORDS :{ CICs and IHD, immune complexes diseases, CICs and MI}

INTRODUCTION:

In the last decade, there had been an upsurge of interest in the role of immune mechanisms in the development and pathogenesis of atherosclerosis and its complications. The classical risk factors like hypercholesterolemia, smoking, diabetes and hypertension explain only part of the epidemiological features of atherosclerotic vascular disease[2] ,also the increased concentration of CICs in association with genetic deficiencies of the complement factor results in the development of chronic vascular damage of the coronary arteries and premature myocardial infarction.[3]

PATIENTS AND METHODS:

This study was performed on 24 patients 13of them had ischemic heart problems and admitted to the coronary care unit at Baghdad Teaching Hospital from April to May 2005 and, 11apparently normal individuals as a control group.
The age was ranging from (40-77) years for the patients group and (24-65) years for the control group. From each individual 5 cc of venous blood samples were drawn for the test.

Fresh platelets from blood bank were used to perform such a test, by which a serial dilution was done to detect the titer of circulating immune complexes.

RESULTS:

The patients with ischemic heart disease attending CCU were subjected to full history intake and a complete physical examination ,they were 10 males and 3 females. The were 10 MI and 3 unstable angina, 8 of them were with heart failure Most of male patients group with IHD, are heavy smokers (8from 10) ,while non of the females smoke cigarettes see table (1,2) The results were examined microscopically to insure the degree of platelets aggregation as an indicator for the presence of CICs ,as shown in table (1) some patients had highly positive results(++), and most of them had positive pL.A.test (+) ,the rest were negative (-) see figures (1,2and3)

Statistical analysis:
Chi square test was used to estimate the significances between the two means, by which $p<0.05$ was considerate to be significant.

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Table1: control group

No.	age(yr.)	sex	Results of PL.A. test
1	65	♂	-
2	34	♂	++
3	54	♂	-
4	42	♂	+
5	37	♂	-
6	35	♀	-
7	34	♀	++
8	24	♀	-
9	32	♀	+
10	40	♀	-
11	29	♂	-

Positive Results of Pl.A. Test ≥8

Table 2 : The patients group.

Patient no.	sex	Age(year)	H.F	M.I	Smoking	Results of Pl.A..test	P>0.05
1	♂	70	+	+	-	+	0.038
2	♂	77	+	-	+	+	
3	♀	52	-	+	-	++	
4	♀	67	+	+	-	+	
5	♀	40	-	+	-	+	
6	♂	50	-	-	+	+	
7	♂	58	+	+	+	++	
8	♂	60	+	+	+	+	
9	♂	60	-	-	-	++	
10	♂	60	-	+	+	++	
11	♂	70	+	+	+	++	
12	♂	56	+	+	+	++	
13	♂	60	+	+	+	+	

M.I.: myocardial infarction
H.F.: heart failure
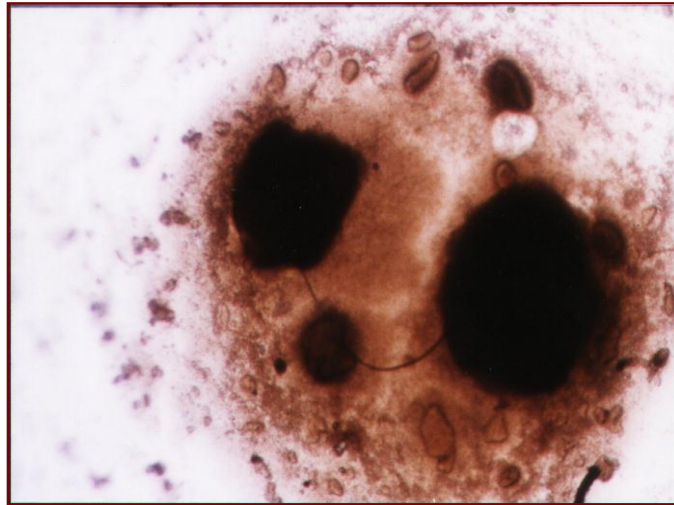Positive and negative results of pl. A. test: +ve>8 , -ve<8

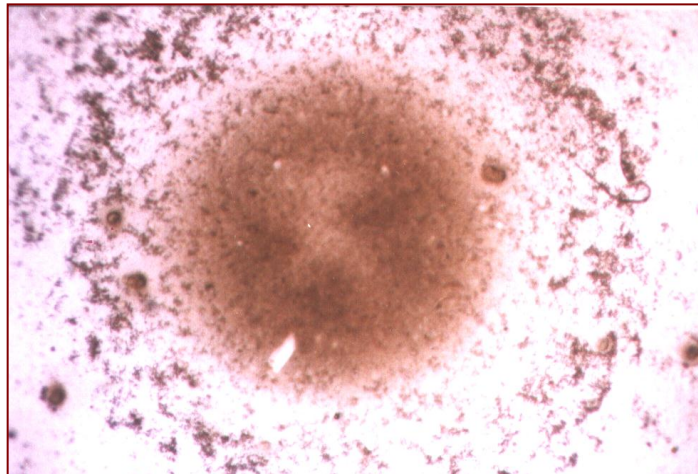**Figure (1): shows highly positive results of PL.A.Test**

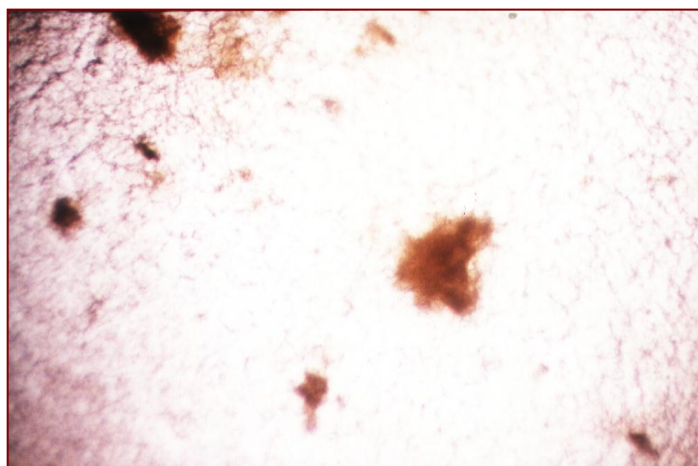**Figure (2): shows intermediate positive results of PL.A.Test**

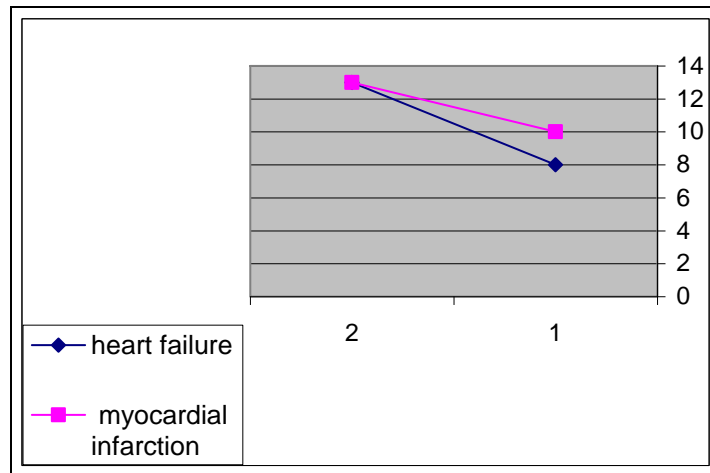**Figure (3): shows negative results of PL.A.Test**

Figure 4: The number of cases with heart failure and myocardial infarction.
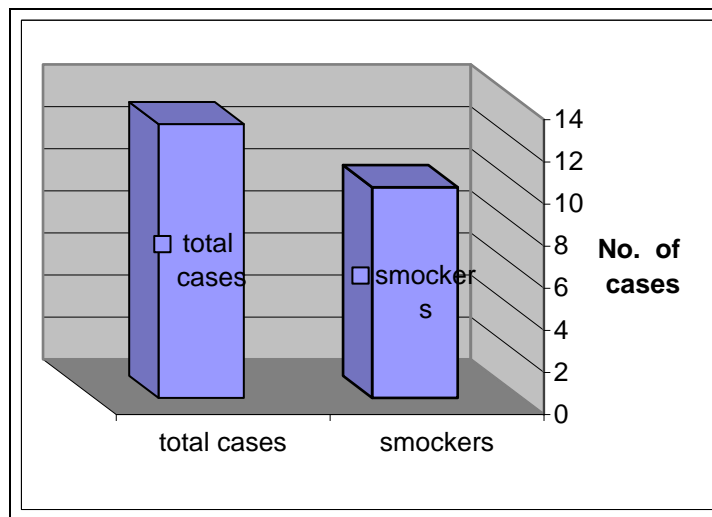

Figure 5: The number of the smokers among the total cases.

DISCUSSION:

IHD is the commonest cause of death in the developed countries as it affects the arterial blood supply of many organs ,there are many predisposing factors involved in it's pathogenesis like sustained hypertension ,hypercholesterolemia ,cigarette smocking which are considered as non-hereditary risk factors . Therefore, it is likely that other unrecognized, factors exist. But there has been more interest in the role of immune mechanisms in the development and regulation of atherosclerosis and its complication (2, 6, 10, 12). Possibly antibody uniting with the myocardial antigen could form a soluble complexes which activate the complement system by the classical pathway ending in myocardial damage ,since circulating immune complexes (CICs)containing low density lipoproteins (LDH) which, were recently found in the blood of patient with coronary atherosclerosis (11,13,14).

The results of the present study showed a100%positive PL.A.test in patients group ,revealing a strong correlation between the CICs and the development of the chronic vascular damage (2,3,7),while the presence of 36% of positive results with PL.A.test in the control group of individuals healthy group, which agreed with that reported by Lefvert et al (3)could be related to common infection or with sub-clinical auto-immune disease which may be predispose to the formation of complexes in apparently normal subjects.(4). In out study there was 10 of men have IHD (MI ,and HF),while 3 of women only have IHD ,and this agreed with that reported by Seelig and Altura (5,6) the prevalence of IHD among women is less common than in men ,but it

increases during postmenopausal years . That is due to the role and place of female sex hormones in primary and secondary prevention of IHD in women (8). In this study table (1) showed the level of CICs of some cases was increasing with age while others was not ,which might be due to small sample size or due to the development of atherosclerotic changes with aging as it was reported by Taracka et al as the role of IC in atherosclerotic responsiveness increases with age. Finally, the mechanisms by which immune reaction involved in the pathogenesis and clinical course of acute vascular incidents are still not completely understood. In addition the measurement of IC levels in MI has not proved helpful in the diagnosis, treatment or prediction of the come of such disorder.(3,7,9).

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