The Acute Phase Protein C, Anti DNA IgM and IgG Responses Among Angina Pectoris Patients

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الخلاصة

كانت عينة الفحص 50 حالة ذبحة صدرية شخصت سريريا في مستشفى مرجان التعليمي في الحلة خلال الفترة من آذار - أيلول 2009 وعينة المجموعة المسيطر 50 شخص سوي. اذ خضع كل من المرضى ومجموعة الاشخاص المسيطر عليهم فحص مناعية من البروتين الفعال C وضد الدنا الذاتي والضد IgM المتخصص بـ IgG الذاتي للتحري عن الدور المحتمل للاضداد الذاتية في الامراض المناعية للذبحة الصدرية . وقد أظهر 70% من المرضى فحص ايجابي لضد البروتين الفعال C وبمدى عيارات 8-128 وتبين بأن 36% من المرضى فحص ايجابي لضد الدنا الذاتي بمدى عيارات 16-32 و 16% من المرضى للضد IgM المتخصص بـ IgG الذاتي بمدى عيارات 4-32 . كانت هيأة الاستجابة المناعية غير متجانسة وبثمان انماط مختلفة وكان كل من الشيخوخة والسكري عامل زيادة في مستوى الاضداد الذاتية في مرضى الذبحة الصدرية مما يوحي بوجود اثر لها في عملية المرض المناعي للذبحة الصدرية وبهذا فان 16-32% من مرضى الذبحة الصدرية يتوقع ان يكون سببها الاضداد الذاتية.

Abstract

Fifty angina pectoris patients (APP) were clinically diagnosed in Mergan Hospital in Hillah city during the period from March to August 2009. While the control group were fifty normal subjects. APP and control groups were subjected to a battery of acute phase protein C, Anti DNA and IgM anti IgG to investigate the role of the auto-antibodies in the immunopathogenesis of angina pectoris (AP) . Thirty-five out of the fifty APP (70%) were positive for acute phase protein response with titre ranges of 18-128. while APP. were positive for Anti DNA and IgM anti IgG autoantibodies were 36% and 16% respectively with titre ranges of 16-32 and 4-32 respectively. The immunoprofile of APP was heterogeneic with eight different patterns. Aging and diabetic stats as clinical entities were associated with high anti DNA and IgM anti IgG autoantibody titres means reflecting the possible involvement of auto-immunity in the immunopathogenesis of AP. 16-36% of AP cases are expected to have an autoimmune origins.

Introduction

The molecular biological and immunological processes within the human body are being balanced and almost interacted, cardiovascular system is not an exception to this them. Thus vessel, any vessel when, injured, bleeding do happened, coagulation system start to functioning assisted with fiberinolytic system to limit such injury. Hypercoagulation due to any cause lead to a disease state and needs to be treated by an extrinisic anticoagulating agent (1,2). Mean time hypercoagulation may terminated by a thrombus, such thrombus in the vascular bed of any organ, may migrate in to vessel till reaching narrowed ones and causing complete or partial obstruction . Such occlusion in arteries nurtioning cardiac muscles for instance may lead to muscle cramping, the immune system, may take part in the process of hypercoagulation and arterial occlusion (3,4) via Ag–Ab complexes, complement activities, autoantibody synthesis and their effects. The immunopathogenesis of chronic cardiac disease implies molecular mimicry of cardiac muscle heat shook protein with that of parasitic pathogenic bacteria leading to autoimmune cardiac diseases. The objective of the present work is to prove the role of autoantibody in immunopathogenesis angina pectoris.

Materials And Methods

Fifty APP (test group) diagnosed by cardiologist following standard criteria for clinical diagnosis (3,4), and fifty normal subjects (control group). Venous blood collected from both groups with 5 mls amount without anticoagulant. Sera were obtained, decomplementized and kept at 18C° till be tested in bachs. Qualitative and semi qualitative titration of C.reactive protein (CRP), anti DNA and IgM anti IgG latex tests (5,6), the nature of underlaying diseases in APP were:

10 out of 50 APP have H.T., 20 have DM, seven HT and DM, four have cardiac failure, three have venous thrombosis, three with arthritis, two have vertigo, and one have no complain.

Results

Acute phase protein C responses:

The fifty (APP) were showing clinically significant titres with a range of 8-128 and rate 35:50 (70%) as showing in table 1.

Anti DNA Autoimmune Responses;

The fifty APP were positive for anti DNA antibody responses with titre limits of 16-32 and a rate 18-50 (36%) as showing in table 1.

IgM anti IgG autoimmune responses;

Eight out of the 50 APP (16%) were showing IgM anti IgG autoantibody responses were positive results with titre limits of (4-32) as showing in table 1.

Herd Humoral Immunity;

APP study population have shown low, medium and high titres of acute phase protein responses, anti DNA autoantibody and IgM anti IgG autoantibody responses respectively as showing in (Fig. 1).

Heterogeneity of humoral immune responses among APP;

It was found that the 50 APP expresses variable degrees of humoral autoantibody heterogeneity and acute phase responses heterogeneity since they revealed eight different seroprofiles as follow:

1- Acute phase and autoimmune responses.
2- Neither acute phase nor autoimmune responses.
3- Acute phase response alone.
4- Acute phase response and anti DNA responses.
5- Anti DNA response alone.
6- IgM anti IgG response alone.
7- Autoimmune response alone.
8- Acute phase response and IgM anti IgG responses.

The most frequent profile was the third, followed by the second then the fourth. While the least frequent was that of 6,7 and 8 as showing in table 2.

Aging effects;

Aged APP were reaching rate of 42:50 (84%) with an age range of 55-85 years, while the non aged with a rate of 8:50 (16%) an age ranging from 23-54 years. The mean titres of acute phase protein C, anti DNA and

IgM anti IgG were 45.4, 7.523 and 2.475 respectively for aged APP while for non aged were 16, 6.0 and 1.5 respectively. Thus, the aged showed higher mean titres as showing in table 3.

The effects of diabetic;

(40%) APP were diabetic and (60%) were non diabetic. Acute phase protein C response mean titres were lower in diabetics 32 as compared to non diabetics 41.6 while diabetics were showing higher mean titres for anti DNA 8 and for IgM anti IgG 2.6 as compared for the non diabetics were 6.66 and 2 respectively as showing in table 4.

Seroprofiles of control group;

The titres ranges of the fifty apparently normal subjects were 2-4 for CRP, up to 2 for anti DNA and 2-4 for IgM anti IgG as showing in table 5.

Table 1: Nature of the humoral herd immunity :

Titres	Acute phase protein C	Anti DNA	IgM Anti IgG
4	0	1	2
8	3	1	3
16	3	8	2
32	8	8	1
64	17	0	0
128	4	0	0
rate (%)	35:50 (70%)	18:50 (36%)	8:50 (16%)

Table 2 : Herd Humoral Heterogeniety as indicated by mean titres of acute phase, anti DNA and IgM anti IgG in APP.

#	Acute Phase protein C	Anti DNA	IgM anti IgG
1	+ (38)	+ (22)	+ (8)*
2	-	-	-
3	+ (52)	+ (20.75)	-
4	+ (55.42)	-	-
5	-	+ (16)	-
6	-	-	+ (16)
7	-	+(32)	+ (32)
8	+ (128)	-	+ (8)

*titre means

Table 3: The effect of aging of APP on humoral immune responses:

APP	Acute Phase Protein C	Anti DNA	IgM Anti IgG
Non-aged 8:50 (16%)	16 * (8-64)	6 (4-32)	1.5 (4-32)
Aged 42:50 (84%)	45.42 (8-64)	7.523 (8-32)	2.75 (4-32)

*titre means ( ) titre ranges

Table 4: The effect of diabetes on APP humoral immune responses:

APP	Acute Phase Protein C	Anti DNA	IgM Anti IgG
Diabetic 20:50 (40%)	32* (8-128)	8 (8-32)	2.6 (4-32)
Non-Diabetic30:50 (60%)	41.6 (8-64)	6.66 (4-32)	2 (4-16)

*titre means ( ) Titres ranges.

Table 5 the titre ranges of the fifty apparently normal subjects

Normal subjects	Titre range
CRP	2-4
Anti DNA	Up to 2
IgM anti IgG	2-4

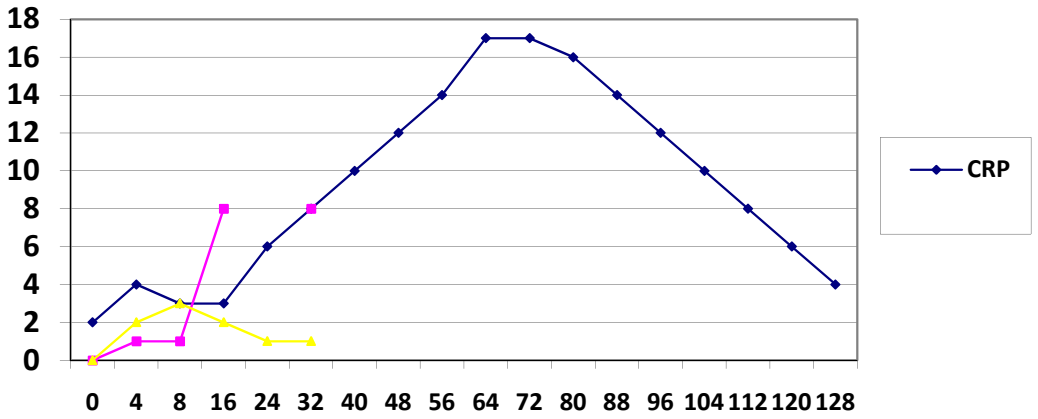

Figure 1 :AP Patient herd Immunity

Discussion

In the immunologic sense, cardiovascular diseases including angina pectoris (AP) can be of immune and autoimmune origin. The immune type are mediated by excessive cytokine production. The autoimmune type, however, can mediate an autoreactive epitopes reactions in the myocardium (7,8). In the present study, a trial was made to uncover the possible autoimmune reactions that can be involved in the immunpathogenosis the test APP.

Acute phase protein C (CRP) is accepted immune marker for general inflammatory process in various human diseases (7).

APP however, is not and expectation this fact. CRP titres were found rising to variable degrees in APP (table 4).

DNA itself is not T cell dependant antigen, it behaves like a hapten physically like to a cluster of nucleosonic protein as carrier. Thus the anti DNA auto-antibody presents piggy-back type mechanism. High anti DNA auto-antibody titres in APP can indicate its involvement in cardiac pathology (8,12).

The IgM autoantibodies the FC protein of IgG are capable of self association to form complexes which induce macrophages to excessive release of cytokine leading to tissue damage in joints and hearts. Thus, high RF values in the sera of the test APP indicate their involvement in the cardiac pathology.

APP were showing mean titres of 16.6 and 1.5 for CRP, anti DNA and IgM and IgG antiantibodies respectively in the non aged APP. While aged APP showed higher titres than in non-aged (table 3). Thus non aged already have these autoantibodies and aging leads to incease of such antibodies which may be active in the myocardium. Although workers advocated that aging is multifunctious processwith marked dominance if autoimmune disease (15). Likewise, diabetics mellitus in APP increase the autoimmune reaction as indicated by the titre mean increase of anti DNA and IgM anti IgG. As compared to non diabetic APP. The mechanism behind IDDM can be either molecular meanicary to heat shock protein 60 may be involved with 24 AA peptide of HSP 60 and is the target of diabetogenic T cell in APP or an organ specific responses operating with the other mechanism (HSP 60) to achieve B

cell destruction by B cell specific autoantibodies. Thus, the major immune feature of APP are:

1- Rise of acute phase protein C.
2- Anti DNA and IgM anti IgG auto-antibodies were found in APP and increased in mean titres both at aging and diabetes.
3- Autoimmune responses may take part in the immunopathogenesis of APP.

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