The Role of anti –DNA Abs. in Chronic Renal Failure in Diabetes Mellitus Type I and Type II

Suha A.AL-Fakhar *,Manal Kamal Rasheed , Mohammed Kamal Rasheed*****

ABSTRACT:

BACKGROUND:

Diabetic nephropathy (DN) is the leading cause of CKD and end-stage renal disease (ESRD). CKD is characterized by a progressive loss of renal function, chronic inflammation

OBJECTIVE:

To compare the relationship between the anti –DNA Abs in diabetic patients type 1 and type 2 and their relation with chronic renal failure.

METHODE:

The ELISA methods was used to detect the presence of anti-DNA –Abs in sera of diabetic patients with type 1 and type 2 D.M. with CRF.

RESULT:

The concentration of anti-DNA Abs. were more in type II D.M. patients with CRF than those with type I D.M. without CRF and control group.

CONCLUSION:

The anti-DNA Abs. play an important role in the CRF in patients with long duration of D.M. type II ,while in patients with short duration of D.M. type I , anti-DNA Abs. do not play a role.

KEY WORDS: anti DNA Abs.

INTRODUCTION:

Inflammation and angiogenesis play a crucial role in the pathomechanism of diabetic nephropathy [(1)] . Chronic kidney disease (CKD) is a serious public health problem, which carries a high morbidity and mortality .CKD is characterized by a progressive loss of renal function, due to chronic inflammation [(2)].

CKD treatment still represents a clinical challenge. Diabetic nephropathy (DN) is the leading cause of CKD and end-stage renal disease (ESRD) [(3)].

Diabetic nephropathy (DN) is among the leading causes of end-stage renal disease (ESRD) in Europe and in the USA[(4)] . A wide range of auto antibodies have been described in DN patients, associated with the progression of diabetes (DM), the development of vascular complications and/or immune-complex glomerulonephritis superimposed upon the DN [(4)].The exact cause of diabetic nephrology is unknown, but it is believed that uncontrolled high blood sugar leads to the development of kidney damage, especially high blood pressure, too much blood can damage these structures, causing them to thicken and become scarred(5). Furthermore the presence of anti-DNA Abs was more frequent in the diabetic type I and type II and their relationship with vascular complications[(5,6,7)].

MATERIALS AND METHODS:

Twenty diabetic children with type I D.M. (8 males and 12females), aged range (2.5-17) years (mean± SD) (10.4±5.2) years were enrolled in this study. All were consecutively admitted to the pediatric clinical of AL-Mansour Hospital ,duration of the disease varied from (1-132) months . Twenty consecutive patients with type II D.M. attended to outpatient in medical city in Baghdad (15 males and 5 females) aged rang (24-60) years mean ± S.D (56±6)years(10 patients had CRF duration of D.M.158.4 months and 6 patients with non CRF duration of D.M. 21.6months). Twenty non diabetic healthy control , similar in age and sex were selected as control subjects mean ± S.D (57±6).The anti ds-DNA Abs(type IgG) were measured by ELISA method in both groups of diabetic patients& control group.

*Unit of Communicable & Clinical Researches Diseases/ College of Medicine –University of Baghdad.

** Department of Clinical Biochemistry /Collage of Medicine – University of Baghdad.

***AL-Karama Hospital.

Statistical analysis :
Data are presented as mean±S.D. Differences between two groups were analyzed by the unpaired Student's *t*-test. A *P* value of <0.05 was considered statistically significant.

RESULTS:

The mean level of anti DNA-Abs in type I D.M. patients without CRF were lower in those with type II D.M. patients with CRF (11.9±8.8, 13.6±4.7)IU/ml as compare to control(8.0±3.1)IU/ml.

Table 1: The Levels of Anti DNA (IU/ml) In Patients With Type I ,Type II Diabetes Mellitus and Controls:

Parameters	Type 1 DM (mean±SD)	No.of patients	Type II DM (mean±SD)	No.of patients	Control mean±SD)	No.of control
-Anti DNA IU/mL)	11.9±8.8	20	13.6±4.7	20	8.0±3.1	20

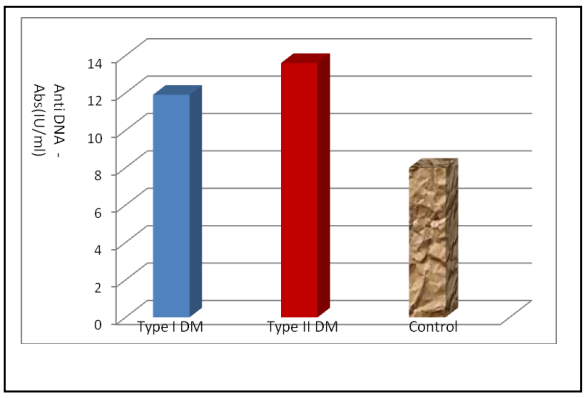

Figure 1: Mean Value Of Main Anti-DNA Abs(IU/ml) In Type I, Type II Diabetes Patients and Control Group.

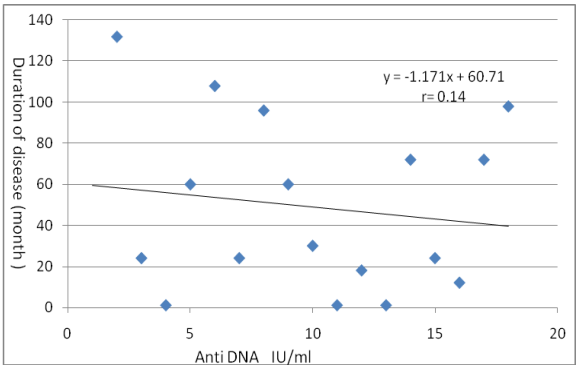

Figure 2: Correlation Between Anti- DNA Abs. Concentration and Duration Of Type I Diabetes Patients , The Association Between Serum Anti- DNA-Abs Versus Duration Of Type I Diabetes Was Non Significant (r= -0.14, p>0.05) .

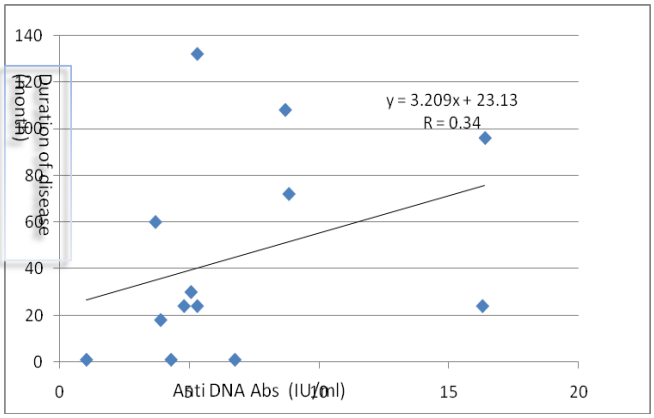

Figure 3: Correlation Between Anti DNA Abs. Concentration and Duration Of Type II Diabetes Patients, The Association Between Serum Anti- DNA-Abs Versus Duration Of type II Diabetes Was Significant r = -0.34,p<0.05 .

DISCUSSION:

Diabetics are susceptible to series of complications that cause morbidity and premature mortality, some patients never develop the problems and in others they begin early on average symptoms develop 15 to 20 years after the appearance of overt hyperglycemia, while few patients have complications at the same time of diagnosis [8,9].

The patients with type II D.M. and with CRF in the present study had higher levels of anti-DNA Abs which were 13.6±4.7 IU/ml, while patients with type I D.M. without CRF had lower levels of anti DNA Abs which were 11.9±8.9 IU/ml , this was confirmed with that reported by [10,11] that Type 2 diabetes mellitus is associated with elevated level of oxidative stress, which is one of the most important factors responsible for the development of chronic complications of this disease. Moreover, it was shown that diabetic patients had increased level of oxidative DNA damage and decreased effectiveness of DNA repair. Also [12,13] reported, that micro- vascular disease leading to renal failure increases the risk of premature atherosclerosis in the diabetic and may contribute to clinical manifestation of diabetic cardiopatheis and peripheral vascular disease. In addition, Giardina *et al.*(1997) and Yokokawa *et al.*(1989) reported that NIDDM patients with diabetic nephropathy or neuropathy had higher titer of anti DNA-Abs than those without these complications. While the presence of anti DNA-Abs in type I D.M. confirmed that IDDM is considered a major endocrine abnormality in children and greatest morbidity and mortality problems in these patients[14,15].But the results of the present study showed that the low levels of anti DNA Abs in both groups of diabetic patients(type I and type II D.M.) in the present study this might be due with that reported by Yokokawa *et al*(1989) that DNA is characterized by rapid disappearance from the circulation in a matter of minutes and localizes mainly in the organs of RES and form immune complexes with stability and the presence of a number of binding site on the DNA molecules that are bound by one or two antibody molecule contribute to the observed solve dissociation of theses complexes which finally deposit at the basement membrane . Also, the results in Figure(2) in present study showed that there was low correlation(r=0.14, p>0.05) between the concentration anti DNA Abs and the duration of type I D.M., while the results in Figure (3) showed that there was high correlation(r=0.34,p<0.05) between the concentration anti DNA Abs and the duration of type II D.M. and these results illustrated with that reported by Yokokawa *et al.*(1989) that the titer of anti DNA Abs was positively correlated with the duration of diabetes (r=0.413 p <0.001)in NIDDM patients .

CONCLUSION:

The anti-DNA Abs play an important role in the CRF in patients with type II D.M. which are related with long duration of the disease. While in type I D.M. patients ,anti-DNA Abs do not play important role in the complication of the disease(CRF)with short duration of the disease.

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