Diabetes Mellitus Type1: Assessment of Some Autoimmune Antibodies and the Role of Immunoglobulin G against Some Viruses

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Date of the debate: 7/7/2010
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Abstract

This study was designed to assess some immunological and virological parameters in patients afflicted with type1 diabetes (T1D). The study was carried out in Erbil city from 1st August 2008 to the 30th December 2009. The samples included 160 patients with type 1 diabetes attending Martyr Layla Qasm Center for diabetes, in addition to 40 healthy subjects as a control group. Blood samples from both patients and control group were tested for serum glucose, autoantibodies, cytokines, immunoglobulin and antibodies against certain viruses.

A highly significant increase in mean concentration of Insulin Autoantibodies IAAs and ratio value of Islet Cell Autoantibodies ICA (39.38 U/ml and 0.0961 ratio value) respectively was detected in sera of patients when compared with their concentration in sera of control group (6.85 U/ml, 0.0200) ($P<0.001$). There is a significant reduction in level of both autoantibodies in patients with advanced age. The mean concentration of serum IAAs was significantly higher among those patients on insulin therapy for more than 15 years when compared with its concentration in sera of patients with insulin therapy for 5 years and 10 years ($P<0.001$). Patients on high insulin dose (41-60 U/24 hours) had a significantly higher mean concentration of IAAs when compared with its concentration in sera of patients on low insulin dose (5-20 U/24 hours) and intermediate dose (21-40 U/24 hours) ($P<0.001$). The mean concentration of IL-4 in sera of patients with IAAs, ICA and mixed autoantibodies were significantly lower compared with its concentration in sera of control group ($P<0.001$). On the other hand the mean concentration of IL-12, IL-18, IFN-γ were significantly higher in sera of patients with IAAs, ICA and mixed autoantibodies compared with their concentration in sera of control group ($P<0.001$). Mean concentration of IgG, IgM in sera of patients with IAAs, ICA and mixed autoantibodies were significantly lower than their concentration in sera of control group ($P<0.001$), while the mean concentration of IgA in sera of patients with IAAs, ICA and mixed autoantibodies was non significant compared with its concentration in sera of control group ($P>0.05$). There was a high significant reduction in mean concentration of IL-4 in sera of patients with mixed autoantibodies than in sera of patients with IAAs and ICA alone ($P<0.001$). The mean concentration of IL-12, IL-18, IFN-γ showed a highly significant elevation in sera of patients with mixed autoantibodies compared with its concentration in sera of patients with IAAs and ICA alone.

The mean concentration of anti-Coxsackie, anti-rubella and anti-Cytomegalovirus IgG antibodies were significantly higher in sera of patients in comparison with their concentration in sera of control group ($P<0.001$).

In conclusions, patient with T1D show a high level of autoantibodies which lead to disturbances in immunological response, and finally devastate the release of Th1 and Th2 cytokine, in addition to that infections with some viruses may be suggestive having a destructive role in the pathophysiology of T1D.

Synthesis and Spectroscopic Identification for Some New Thiazolidinone Derivatives and 2-Substituted Phenyl- 2,3- Dihydro-1h-Perimidine

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Abstract

New thiazolidinone derivatives have been synthesized by the condensation of amino and aldehydes-group containing molecules via the intermediacy of a Schiff base, employing conventional methodologies. Synthesis of new thiazolidinone derivatives was opted for the research work due to their commercial and medicinal importance. The new nuclei were approached by a different routes using 2-amino 4-(3-nitrophenyl)1,3-thiazole, 2-amino-5-(p-tolyl)-1,3,4-thiadiazole and p-chlorophenyl acid hydrazide as a starting materials. Cost- effective, cheaper, indigenously feasible and easy to handle synthetic routes have been followed for the synthesis of several 4-thiazolidinone compounds with good yields and product purities.

1- The first part of this work was preparation of the amino group containing compounds using different methods and starting materials.

The second part was the preparation of Schiff base, initially the 2-amino-4-(3-nitrophenyl)-1,3-thiazole,2-amino-5-(p-tolyl)1,3,4-thiadiazole and p-chlorophenyl acid hydrazide reacted with different substituted benzaldehydes to produce the corresponding Schiff base.

The prepared Schiff bases were allowed to react with thioglycolic acid under anhydrous refluxing conditions at different reaction times, to form the corresponding 4-thiazolidinones as a third part of this work.

The fourth part of this work was the reaction of 1,8-Diaminonaphthalene with different substituted aromatic aldehydes in a hope to prepare fourth series of 4-thiazolidinone derivatives. But we got different results than expected, initially formed Schiff bases, then the cyclization process was occurred and perimidine products were formed.

The structures of the synthesized product were confirmed by analytical and spectral data (IR,1H-NMR,13C-NMR, 13C-NMR-DEPT,(EI)MS,(ESI)),some of the products were screened against different strains of bacteria. Gram +ve S-aureus and Gram – ve bacteria Pseudomonas aeruginosa and Ecoli.

Name:

Degree: PhD

Specialty:

Date of the debate:

Supervisor: