Association of some Viral infections and asthma: serological evidence

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Abstract:

Background: It is well known that mycotic antigens have an important role in atopy and the induction of asthma. Now one of the important subjects is the relation between respiratory bacterial and viral infections in the inflammatory reactions accompanied with bronchial asthma viruses Bacteria or their metabolites act as trigger for asthma or increase it's intensity .

Objectives: To show the relation between asthma and some viral infections serologically.

Methods: Direct ELISA test was employed to detect lgG specific for Respiratory Syncytial virus (Rsv) parainfluenza virus type (p13) and influenza virus in sera of (100) asthmatic patients of two age groups. (10-17) and(18-50) years old. Serum samples from(32) intact control individuals of the same age groups were also investigated.

Results: significant mean values of lgG specific for parainfluenza type-3 and Respiratory Syncytial viruse were found incontrast to normal control individuals. Non significant values of lgG specific for influenza virus were detected in asthmatics in contrast to control normal individuals.

Conclusion: Respiratory Syncytial virus appears to be a prominent cause of concomitant infections in asthmatic children and some adults as well as parainfluenza virus type-3 within age group (10-17) years old asthmatics so RSV and p1-3 viruses may be contributers to asthma severity in asthmatic patients.

Keywords: Asthma, Infection and asthma, Virus and asthma.

Introduction:

Recurrent bronchitis with viral or bacterial infections included a bronchospastic concept and directed attention to link between infection and asthmatic reaction[1,2,3,4]. Exposure to polluants and infections with both viral and bacterial agents may be important initiator and development of asthma and allergy[4,5]. Respiratory Syncytial virus appears to be a predominant cause of infectious asthma in children of pre-school age particularly those under the age of three years followed by parainfluenza and influenza viruses[6]. In older children and adults, Rhinoviruses and influenza type A virus were the most important pathogens([1,4,7]. Severe attacks of asthma were found due to viral and other concomitant infections, such as Mycoplasma pneumoniac infection[8]. This study was introduced to show the association between influenza virus parainflwenza type-3 and Respiratory Syncytial virus(RSV) and asthma.

Methods

A. patients and control groups:

one hundred blood samples were collected aseptically in serum tubes from asthmatic patients of two age groups(10-17) and (18-50) years old from both sexes . these patients attended Ramadi General Hospital, Department of Allergy and Asthma during the period extended from June 2002 to February 2003. Serum samples were separated from these blood specimens and kept frozen at -20 to be examined later, blood specimens were also collected from(32) healthy individuals from both sexes equally as control they were submitted to the same clinical investigations and questionnaire which were done for patients.

Serology: Direct ELISA test was employed to detect lgG specific for parainfluenza type -3, Respiratory Syncytial virus(RSV) and influenza virus. Microtitration plates(Falcon) coated with antigens of each virus (institute virion German) following methods of Fernandez and Vetvika[9]. Reagents and conjugate required for ELISA were from (Biokit Spain) ELISA results were recorded using ELISA reader type Bio . Tek instruments within wave length (450 nm) cut of value of each test for each viral antigen were calculated following method of Al-Murroni et al[10].

Statistical Analysis: Data were analyzed using Chi square test as mentioned by Daniel[11]. SD values were calculated for mean values of each treatment .

Results:

Asthmatic patients showed more mean values for lgG specific for Respiratory Syncytial virus (RSV) than control individuals ($p < 0.005$) . Patients within age group(10-17) years showed more mean values for lgG specific for Respiratory Syncytial virus than adults (table-1). No Significant difference ($p > 0.5$) in the values of lgG specific for parainfluenza type-3 virus between control and test adults of both sexes, while more values for lgG specific for the same above mentioned virus were seen in sera of patients of age group (10-17) years (table-2) . non significant difference in the mean values for lgG specific for influenza virus between control and patients sera ($p > 0.5$) in both sexes and age groups (table-3).

Discussion :

Our observations regarding Respirator Syncytial virus were in accordance with the pioneers. Age related variations in the mean values of lgG specific for Respiratory Syncytial virus (RSV) might be due to the higher incidence rate of (RSV) infection in children than adults[6,14,15,18].

Increased values for lgG specific for Parainfluenza type-3 (p13) within the age group(10-17) years old individuals accepted with that of Minor etal[1], Zach etal[17], Hall and Hall[18].

Non significant mean values for lgG specific for(p13) in adult sera might be attributed to the low severity of (p13) viruses in adults[4,17,18,19,20]. Our findings regarding values of lgG specific for influenza virus were not in accordance with the authors[1,4,20,21].

This discrepancy in these observations might be due to variation in the viral strain virulence which was mostly owed to the ability of Influenza viruses to drift atigenically each a year result in the variable suscepbility of all age groups[20,22,23]. lgG mean values increased with age and this was attributed to the continuous exposure to influenza infection in our community as well as the increased surveillance of immune system with age increase[24].

In conclusion viral infections may increase severity of asthma especially(RSV) and (p13) in children and some adults.

(RSV) appears to be the prominent concomitant infective agent in asthmatic children and some adults as well as(p13) in the age group (10-17) years old asthmatics.

So viral infections must be regarded during manipulation of asthmatic patients. More detailed studies on lgE specific for viral allergens and their mediators. More detailed accurate diagnostic and antiviral therapeutic considerations must be regarded further .

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