

ORIGINAL ARTICLE

Investigation of IgA, IL-9, IL-13, and hs-CRP Levels Among Asthmatic Patients with Recurrent Respiratory Tract Infections in Southern Regions of Iraq

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ABSTRACT

Key words:

Asthma, IgA, IL-9, IL-13, hs-CRP

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Background: Asthma is a chronic inflammatory condition causes chest tightness, wheezing, coughing, and shortness of breath. **Objectives:** To assess the levels of IL-9, IL-13, and hs-C-reactive protein in asthmatic patients and controls and assessing level of IgA in all studied cases to investigate presence of IgA deficiency if present. **Methodology:** A case control study was carried out during (October-April 2024). Out of 380 randomly selected cases with age range (7-80 years), 250 were asthmatic patients and 130 healthy controls. Immunological tests were done by using ELISA to measure levels of IgA, IL-9, IL-13 and hs-CRP. **Results:** IgA, IL-9 and hs-CRP levels were increased significantly in patients with recurrent respiratory tract infection (RTI) at p -value<0.05. Levels of IgA, IL-9 and IL-13 were increased non-significantly in atopy patient, except hs-CRP. Weak negative correlation between age group and both IL-9 and hs-CRP, IgA scored a moderate positive correlation with IL-9, and moderate positive correlation with both IL-13 and hs-CRP. IL-9 scored moderate positive correlation with IL-13 and weak positive correlation with hs-CRP. IL-13 scored very weak positive correlation with hs-CRP. **Conclusion:** Receiver Operating Characteristic (ROC) test indicated that all patients have positive results compared with control group, 77% of patients with IgA level were more than or within average of control group, and 23% were less the average of control group. Regarding to IL-9 and IL-13, more than 60% of patients have cytokines mean more than or within the mean of control group. Regarding hs-CRP, it was less specific indicator than other parameters.

INTRODUCTION

Asthma is considered a heterogeneous disease with chronic airway, demographically distinct locations and pathophysiological features^{1,2}. Asthma is classified regarding to etiology and triggers to allergic, non-allergic, occupational, exercise-induced bronchoconstriction and aspirin-exacerbated respiratory disease³. Additionally it can be classified regarding to severity and control into intermittent, persistent, and severe persistent⁴.

Moreover, it can be classified regarding to inflammatory phenotype into type2 (T2) low, T2-high allergic, and T2-high non allergic asthma⁵. Regarding to Iraq, numerous researches have been done to recognize the prevalence of asthma⁶. Pandemic-related items may for the time being a decrease asthma rate⁷. A meta-analysis research through 2016 figured that the Eastern Mediterranean regions have insufficient analysis and details in the zones of asthma and chronic obstructive

pulmonary disease. Further attempts and proper work are needed to recognize the prevalence and concern of these diseases⁸.

Asthma is characterized by reversible, episodic constriction of the airways and inflammation in reaction to environmental allergens, irritants, and infections. It is a multifaceted, immune-mediated, and intricate process that manifests as a range of clinical manifestations⁹. Coughing, wheezing, shortness of breath, and chest tightness are signs of asthma, a chronic inflammatory disease of the airways that is triggered by inflammation of the airways, which causes mucus production, remodeling of the airway wall, and bronchial hyper responsiveness (BHR), which is the propensity of smooth muscle cells to respond to non-specific stimuli like cold air¹⁰. Some asthmatic patients suffer from respiratory tract infections, some are viral but most are bacterial infections¹¹. Recent documentations exhibit that wheezing episodes at the first years of life that resulted from some viral infections give probability for later asthma¹².