Study of Basophil Activation Markers in Pediatric Asthma

Reda Sanad Arafa¹, Neveen Tawfik Abed¹, Shuzan Ali Mohammed*, Ahmed Ali Rashwan¹

¹Pediatrics Department, Faculty of Medicine, Benha University, Egypt
²Medical Biochemistry Department, Faculty of Medicine, Benha University, Egypt

Abstract:

Background: Bronchial Asthma, one of the most common chronic diseases in children, is associated with environmental and genetic risk factors. Basophils are implicated in various human diseases due to expression of basophil activation markers; CD203c and ST2L. CD203c has been used to diagnose and monitor various allergic diseases, but its relationship to asthma is obscure. ST2L is secreted in response to cell damage.

Objective: To determine ST2L and CD203c gene expression in preschool children with stable asthma and clarify their role in diagnosis or severity prediction.

Subjects and Methods: This study included 130 preschool children; 90 clinically diagnosed stable asthma and 40 apparently healthy controls. Complete blood count with differential count was performed. Immunoglobulin E level was measured by ELISA. CD203c and ST2L gene expression was done by quantitative real-time PCR.

Results: CD203c and ST2L gene expression showed high significant increases in asthmatics versus controls especially those with positive family history of atopy or uncontrolled asthma. Their gene expressions were more in persistent asthma subgroups versus intermittent asthma and were increased with increasing severity. CD203c and ST2L cutoff expression levels for asthma diagnosis were 1.18 and 1.52 folds, respectively. CD203c and ST2L expression levels were significantly positively correlated with each other and with basophil % in BA.

Conclusion: Enhanced CD203c and ST2L gene expression in preschool asthmatic children might help diagnose and predict severity to allow therapeutic regimens to be patient-tailored. This work drew an attention toward asthmatic children with positive family history of atopy to be picked up early.

Keywords: Bronchial asthma, preschool children, gene expression, qRT-PCR, CD203c, ST2L

*The corresponding author; Phone: 01146964227, Email: shuzan.ali@fmed.bu.edu.eg