In vitro antigen-specific sulphidoleukotriene production in patients allergic to Dermatophagoides pteronyssinus

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Abstract of:

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Background: Sulphidoleukotrienes (slt) are important mediators in allergic diseases that are synthesized after allergen-specific stimulation.

Objectives: The aim of this study is to determine in vitro slt production after allergen-specific (Dermatophagoides pteronyssinus) stimulus of peripheral blood leucocytes and to observe whether histamine release in whole blood with the same allergen correlates with slt production. We also wanted to evaluate whether a correlation exists between the release of slt and histamine and other diagnostic procedures as well as various clinical situations.

Methods: We studied 62 patients sensitive to Dermatophagoides pteronyssinus (Der p), 30 atopic controls and 12 healthy donors. We determined slt production using the CAST-ELISA technique and histamine release using two concentrations of Der p extract (20 and 2 ng/mL). We also carried out quantification of specific and total IgE levels, skin tests and pulmonary function test on each patient.

Results: We observed a significantly increased slt release after in vitro stimulation with Der p. There was a significant difference in the slt release between controls and sensitive patients (P<0.001) and between atopic controls and sensitive patients (P<0.001). The data are similar to those obtained with histamine release. We noted a positive correlation (P<0.001) between slt and histamine release (r=0.71, at 2 ng/mL and r=0.83 at 20 ng/mL). We also found a positive (P=0.001), although weak (r=0.4 with at 2 ng/mL, and r=0.34 with P=0.003 at 20 ng/mL) correlation between slt release and specific IgE levels as well as between slt release and skin-test reactivity (r=0.49 at 2 ng/mL; r=0.45 at 20 mg/mL; P<0.001). No significant correlation between slt release and asthma severity was observed, although a trend toward higher slt production in severe and moderate asthma was detected. We found a significant (P<0.001) but weak (r=-0.3) negative correlation between age and slt release. With respect to sex-related differences, we found significant differences (P<0.05) in slt release between the sexes with a higher slt release in men than in women.

Conclusion: We conclude that CAST-ELISA for quantification of slt production is a useful in vitro method for diagnosing sensitization to Der p. There also exists a close correlation between slt release and other parameters of allergic sensitization in vitro as well as in vivo.

Key words: asthma, CAST-ELISA, D. pteronyssinus, diagnosis, histamine, histamine release test, sulphidoleukotrienes.

In vivo validation of the time domain velocity measurement technique if blood flow in human fetuses

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Time domain ultrasonography is an alternative to Doppler analysis of blood flow direction and velocity. The time domain technique uses timing information between successive echo pulses to measure flow