

## ***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

velocities directly through a color display map. This study was undertaken to validate this technique for measuring peak systolic velocity compared to the pulsed-wave Doppler method in human fetuses. Twenty normally developing fetuses were included in the study. The fetal abdominal aorta and the umbilical artery were studied in 12 and eight cases, respectively. We first estimated flow velocity using time domain ultrasonography and immediately after pulsed Doppler was used. The intraclass correlation coefficient was

used to assess the agreement between measurements. A close correlation was found (intraclass correlation coefficient = 0.96). Our results show that time domain ultrasonography seems to be a valid technique for imaging fetal vessels and for measuring blood flow velocity.

*Key words:* Time domain processing, Doppler, Blood flow velocity, Fetus.

## Transvaginal ultrasonography combined with color velocity imaging and pulsed Doppler to detect residual trophoblastic tissue

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The value of transvaginal B-mode ultrasonography combined with color velocity imaging and pulsed Doppler to detect retained trophoblastic tissue was evaluated prospectively in a series of 40 patients with postpartum (n=15) or postabortion (n=25) bleeding. Color velocity imaging was used to identify color-coded blood flow signals within myometrium and/or endometrium. Flow was subjectively quantified as absent, scanty or abundant. Pulsed Doppler was used to assess blood flow impedance by calculating the resistance index. The presence of abundant flow with a lowest resistance index of less than 0.45 was considered as suspicious of residual trophoblastic tissue. Twenty-two (55%) out of the 40 patients underwent dilatation and curettage and chorionic villi were demonstrated in 15 of these. Eighteen (45%) patients were managed conservatively. None of these patients suffered complications or needed readmission for curettage, and all of them were considered as not having retained tissue. On color pulsed Doppler ultrasound examination, 15 patients had suspected

retained tissue; all of these underwent curettage and residual trophoblast was found in 14 (93.3%). Out of 25 patients considered as having no residual tissue on color pulsed Doppler ultrasound examination, seven underwent curettage and chorionic villi were found in one patient (false-negative rate 6.7%). All patients managed conservatively had an unsuspecting scan. We concluded that transvaginal ultrasonography combined with color velocity imaging and pulsed Doppler could be useful to detect retained trophoblastic tissue and to select patients suitable for conservative management.

*Key words:* transvaginal ultrasound, color velocity imaging, pulsed doppler, residual trophoblast.