Sulphidoleukotriene and Histamine Releasability in Atopic Patients

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Key Words

Sulphidoleukotriene

Histamine release

Atopic patients

Anti-IgE

D. pteronyssinus

L. perenne

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In 1977, Conroy et al. [1] defined releasability as the ability of the basophil to release mediators in response to antigen or anti-IgE stimulus. This releasability implies that some biochemical events determine the basophil to release mediators in response to an activator [2-4].

In this study, we evaluated the releasability of cellular mediators in atopic patients by means of in vitro quantitation of sulphidoleukotriene (sLT) production and histamine release in whole blood after stimulus with antigen and anti-IgE antibodies.

We studied 92 atopic patients sensitive to *Dermatophagoides pteronyssinus* (n = 62) or to *Lolium perenne* (n = 54), diagnosed by skin tests and specific IgE quantification (CAP FEIA Pharmacia, Uppsala, Sweden). We also studied a control group of healthy donors (n = 12).

In vitro production of sLT in the presence of IL-3 was measured after stimulus with an anti-IgE monoclonal antibody (Le27; Bühlmann, Basel, Switzerland), as well as after antigenic stimulus with *D. pteronyssinus* and *L. perenne* extracts (at 2 and 20 ng/ml). Leucocytes obtained from peripheral blood after dextran sedimentation were incubated with antigen or anti-IgE antibody (40 min at 37°C), and sLT was quantified in the supernatants with CAST (Cellular Assay Stimulation Test, Bühlmann).

Histamine release was determined with the fluorometric method of Shore, automated by Siraganian, in a Bran-Lüebbe Analyzer. The whole blood was incubated with polyclonal anti-IgE (Caltag, South San Francisco, Calif, USA) at 4.2 µg/ml and with *D. pteronyssinus* and *L. perenne* at the same concentrations as above.

2,000 -↑

1,500 -

p < 0.001

α 1,000 -

n = 92

500

n = 12

Controls Atopies

Fig.1. sLT production after stimulus with anti-IgE.

We found an IgE-dependent sLT production in response to anti-IgE antibodies; this response was higher in atopic patients than in controls ($p < 0.001$; fig. 1). We also found a positive and significant correlation between IgE-dependent and antigen-specific releasability. This releasability was higher in sLT production ($r = 0.8$; $p < 0.001$; fig. 2) than in histamine release ($r = 0.5$; $p < 0.001$). We also noticed a positive and significant correlation between specific histamine release and specific sLT production ($r = 0.67$; $p < 0.001$; fig. 3).

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2,000 Anti-IgE sLT production (pg/ml)

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50 100
Ag-specific histamine release
150

Fig. 2. Correlation between antigen (Ag)-specific and IgE-dependent sLT production.

Fig. 3. Correlation between antigen (Ag)-specific histamine and sLT release after stimulus with *L. perenne* 2 ng/ml.

On the other hand, the highest specific sLT production was attained at 20 ng/ml for *D. pteronyssinus* and at 2 ng/ml for *L. perenne*.

IgE-dependent releasability decreases with patient's age, in sLT production as well as in histamine release.

We conclude that the quantification of sLT production after anti-IgE stimulation is a useful method to study cellular releasability and, in addition, that such releasability is higher in atopic patients than in healthy donors.

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