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B cell activating factor (BAFF) and platelet activating factor (PAF) could both be markers of non-IgE-mediated reactions

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Background

B cell activating factor (BAFF) is a member of the tumor necrosis factor superfamily and an important regulator of peripheral B cell survival, maturation and immunoglobulin class-switch recombination. Many studies suggest that BAFF might be a new mediating mechanism in food-related inflammation. Higher levels in non-atopic compared with atopic patients, and no correlation between BAFF and IgE, suggest that BAFF might be particularly involved in non-IgE-mediated reactions [1]. According to Finkelman there are 2 pathways of systemic anaphylaxis: antigens can cause systemic anaphylaxis in mice through the classic pathway by cross-linking IgE bound to mast cell FcεRI, stimulating histamine and PAF release, or the alternative pathway by forming complexes with IgG that cross-link macrophage FcγRIII, stimulating only PAF release [2]. The aim of this study is to evaluate the correlation between BAFF and PAF in non-atopic subjects.

Methods

We measured the concentration of BAFF (ng/ml) and PAF (ng/l) in the serum of 64 patients (45 females and 18 males, age 44.94 ± 8.51). All tested subjects did not have IgE-mediated allergies.

Results

There is statistical evidence of correlation between BAFF and PAF based on the results of a Kendall correlation test ($p < 0.0001$). We explored also the relationship between BAFF/PAF and age and sex of patients. Since both BAFF and PAF are bimodal, we decided to dichotomize them based on biologically relevant thresholds (≧ 2 ng/ml, and ≧ 7 ng/l, respectively). For both outcomes, we fit a logistic regression and identified age as a significant predictor for each ($p < 0.005$). In particular for every yearly increase in age, the log odds of having BAFF and PAF over the thresholds is decreased by 0.15 and 0.20, respectively.

Conclusion

The second pathway of anaphylaxis requires IgG antibodies, macrophages, FcγRIII and PAF (but not histamine, serotonin, or leukotriens). The highly significant correlation between BAFF and PAF in non-atopic patients supports the possibility that BAFF is involved in non-IgE-mediated allergic reactions. BAFF is probably one of the cornerstones of the alternative pathway of allergy.

Disclosure of interest

None declared.

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