



Atopy and autoimmunity illness: is there a link?

Campana G, Valenti N, Cocurullo G, Fusco N, Manti S, Conte M, Galdo F, Miraglia del Giudice M, Perrone L
Pediatric Department, Second University of Naples

Recent observations have challenged the validity of the Th1/Th2 paradigm. The new paradigm identifies additional lymphocyte subsets, such as Th17 cells (1), soluble factors such as IL-9 (2), and regulatory T cells (T reg) (3). Consequently, there has been considerable interest in defining the relationship between the expression of allergic and autoimmune disease in patient populations.

A series of clinical reports addressed the coincidence or co-prevalence of atopy with autoimmune disease such as psoriasis, rheumatoid arthritis, multiple sclerosis and type 1 diabetes mellitus (4).

Nevertheless recent studies suggest that IL-4 and IgE may be involved in the development, progression, and maintenance of Graves' disease (5) and a role for Treg in the natural progression of hyperthyroid Graves' disease to Hashimoto's thyroiditis and hypothyroidism in humans (6), the occurrence of a possible association between thyroid autoimmunity and atopy has not been extensively investigated. In addition, the prevalence of thyroid autoimmunity for healthy children has been studied by Marwaha and coll. that found a prevalence of 1.6% in 6, 183 girls (7) while Jaksic and coll. recorded a prevalence of 0.35% in 5, 462 school-age children (8).

Atopy and thyroid autoimmunity can be two potential outcomes of dysregulated immunity. Several studies challenge that the Th1/Th2 paradigm has served as a useful basis for thinking about the pathogenesis autoimmune and atopy. Th1 cytokines may either be pro or anti inflammatory in the same autoimmune disease, with the outcome dependent upon when they are introduced in the course of pathogenic events (9, 10, 11, 12).

Th17 cells play a pivotal role in the pathogenesis of several autoimmune disease, largely by induction of cytokines and chemokines that promote chemoattraction of inflammatory cells (13).

Th17 cells may also contribute to the pathogenesis of the allergic inflammation by means of IL17E cytokine (14). Furthermore recent study present evidence that IL-17a enhances IgE production, although the precise mechanism remains unclear (15).

Regulatory T (Treg) cells, defined by the expression of CD4, CD25 and the transcription factor forkhead box P3 (FOXP3), have a central role in protecting an individual from autoimmunity.

Evidence that an inadequate number of Treg cells leads to autoimmunity in humans is most clearly shown in patients with Immunodysregulation, Polyendocrinopathy, Enteropathy, X-linked syndrome (IPEX), who completely lack Treg cells as a result of a mutation in FOXP3 (16).

However, most patients with autoimmune disease probably have a more modest reduction in Treg cells. There is also evidence that the numbers or function of both subsets of Treg cells may be deficient in patients with atopic allergic disease. Recent work has extended these findings into the airway in asthma where Foxp3 expression was reduced and CD25 Treg-suppressive function was deficient (17).

A population study showed asthma prevalence and incidence as inversely correlated with a number of autoimmune disease that were also diagnosed at enrolment, suggesting that those with newly diagnosed autoimmunity were less prone to have asthma (18). On the other hand, this data is in contrast with the evidence that Treg cells may be deficient both in autoimmune disease, both in atopic disease and asthma. But, some experimental findings have suggested that other autoimmune mechanisms might be operating in asthma. Indeed, NK T cells are protective in experimental animal models of autoimmune disease as well as in several types of human autoimmune disease (19). It is considered that the NK T cells, which secrete a Th2 profile of cytokines, are those that improve autoimmunity (20). They also can contribute to pathogenesis of spermental models in asthma (21).

The clinical relevance of NKT cells in human asthma is supported by the observation that NKT cells are present in the lungs of some patients with asthma, particularly patients with severe poorly controlled asthma, although additional research is required to more precisely define the specific role of NKT cells in human asthma (22). Therefore, these evidences indicate the possibility that the Th2 like NK T cells may contribute to the pathogenesis of asthma and have an immune-regulatory function in autoimmune disease. In conclusion, that it is tempting to speculate that NK T cells can favour asthma onset and at the same time improve thyroid autoimmunity. Naturally, interventional studies in relevant animal models and in humans are needed to verify this hypothesis.

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