

New Tools in the Knowledge of the Physiopathology of Asthma. Current and Future Applications

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Received: February 19, 2019; **Published:** March 21, 2019

Asthma current knowledge about its pathophysiology and its importance to understand the disease and its treatment in the light of current knowledge.

All this current knowledge, with which we will tell in this issue of pulmonary EC, on the pathophysiology of asthma added to the phenotypes and the differences between the asthma of the child, the adolescent and the adult will make it possible to understand the range of treatments to be developed, without forgetting take into account everything we know about the microbiome and the mucosal epithelial lesions. Based on all the above we can put into practice the best individualized treatment for each patient, including all aspects and not only taking into account the pharmacology.

We know that type 2 immunity constitutes the adaptive response characteristic of atopic individuals exposed to the sensitive allergen.

We also know, according to recent discoveries, of the importance of epithelial dysfunction in the pathogenesis of asthma.

The histological and functional changes that occur in the mucosal epithelium of the airway due to different factors; allergenic, environmental, viral, bacterial (damage to barrier functions of the airway) have an important association with the pathophysiology of asthma.

The pathophysiology of asthma symptoms is due to airway hypersensitivity, chronic inflammation of the respiratory tract, repeated damage. As a consequence, the fragility that occurs in the epithelium allows the release of cytokines, such as TSLP, IL-25, IL-33. Likewise and as a consequence of this injury, the activation of dendritic cells, the Th2 lymphocyte and ILC2 form an immunopathological unit that causes allergic inflammation of the respiratory tract.

The type 2 immune response involves Th2 cells and production of IgE as conductors of this response. We should also know that there are many other environmental stimuli, such as contaminants and viruses, capable of developing an inflammation of the same pattern without being atopy.

The polarization of an impaired Th2 response in asthmatic patients and the importance of innate immunity in such polarization is also increasingly evident.

It is very important to take into account, then, a review of the pathophysiology of asthma and its different types, including the update of the relevance of dysregulation of innate and adaptive type 2 immunity in the pathogenesis of this disease. I refer above all to severe asthma and the role of allergens that are associated with severe asthma.

Innate immunity in the polarization of an impaired Th2 response in asthmatic patients. Under this perspective, the cross-talking complex between the epithelium of the airway, innate and adaptive immunity is emerging as an important determinant of the type 2-inflammation beyond allergens.

This review will include an update on the relevance of the deregulation of innate and adaptive type 2 immunity in the pathogenesis of asthma, specially in severe asthma, and in the role of allergens associated with severe asthma

Type 2 immunity will also be reviewed in light of current and future objectives.

We made reference to the microbiome. It will be necessary to see everything that until now is known about its physiopathology; The discovery of new molecular mechanisms, the median of communication between host and microbes, the role of microbes in influencing immune responses of the mucosa.

T-regulatory cells, effector lymphocytes, NKT cells and B cells can be influenced by the microbiome.

Microbial dysbiosis in the intestine and lung is increasingly associated with the incidence and severity of asthma.

The more accurate endotyping of patients with asthma may be assisted by a more detailed analysis of the composition and metabolic activity of an individual's microbiome. In addition, the efficacy of specific therapies may be influenced by the microbiome and new therapies based on bacteria should be considered in future clinical studies.

Once the physiopathology and the concept and motive of their exacerbations are known, as well as the control of the pathology in question, it will be necessary to delve into the old and new treatments and determine when to use the biological ones [1-11].

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Volume 8 Issue 4 April 2019

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