



Immunol Allergy Clin N Am  
22 (2002) xi–xii

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IMMUNOLOGY  
AND ALLERGY  
CLINICS OF  
NORTH AMERICA

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Preface  
Asthma and the environment



Patricia W. Finn, MD  
*Guest Editor*

The incidence of asthma has increased over the last 20 years; it has been termed a worldwide epidemic. The factors that have contributed to this asthma epidemic need to be clearly defined in order to devise appropriate prevention or intervention strategies.

The current issue of *Immunology and Allergy Clinics of North America* focuses on asthma and the environment. The goal of this issue is to examine critical environmental pressures leading to the striking increase in asthma incidence. The influence of geography, socioeconomic status, age, gender, occupation, immune status, and genetics on asthma incidence are presented. The diversity of the topics presented underscores our growing understanding that asthma may be better defined as a syndrome rather than a distinct disease.

The first three articles focus on the clinical impact of the onset of asthma in early life. The first article addresses asthma as an international worldwide epidemic. Environmental influence is defined in relationship to the following categories: western countries versus developing nations, European versus western Europe, and rural versus urban influences. The second article recognizes that factors leading to the initiation and maintenance of the asthmatic inflammatory response begin in early life, or perhaps even *in utero*. The review covers recent advances in innate and adaptive immunity, with regard to the fetal immune system and its interaction with the maternal environment. Next, an examination of inner-city asthma focuses on a high-risk population of children. Worldwide, under certain conditions, infections may confer protection against asthma. In contrast, this review presents a compelling description of US inner-city children who have higher asthma prevalence and severity despite repeated infections. This

example is only one of many presented in this issue that emphasize the eclectic factors that must be considered in understanding the pathways leading to the increase in asthma incidence.

Next, distinct environmental influences are highlighted in two articles reviewing the impact of gender and occupation on asthma pathogenesis and incidence. Gender is increasingly recognized as influencing multiple immunological diseases, including asthma and obstructive lung disease. Similarly, the identification of asthma-inducing exposures is critical, as occupational asthma is the most prevalent occupational lung disease in developed countries.

The next three articles consider novel pathways involved in the onset and perpetuation of the asthmatic immune response. First, neuroimmunologic control is reviewed to emphasize the concept that neural, neuroendocrine, and immune systems should be viewed as interrelated entities in asthma pathogenesis. Second, the role of prostaglandins is reviewed, supporting the notion that more selective inhibitors of the prostaglandin pathway may ultimately be of benefit therapeutically. The third article strives to understand differences in an upper airway disease (allergic rhinitis) versus a lower airway disease (asthma) by comparison of the role of antigen presenting cells in these two disease entities.

The next two articles address basic mechanisms that initiate asthma and suggest state-of-the-art approaches for gene identification. Transcription factors and the enzymes that modify them are examined for their importance in the asthmatic inflammatory cascade. The second article describes functional genomics, the analysis of many genes by DNA microarrays, using transplantation as a paradigm. The application of this powerful approach to uncover asthma-related genes may become a promising tool in diagnostic laboratories.

The final article addresses fatal asthma. The increase in this critical illness compels us to understand the underlying mechanisms of asthma in order to devise creative and appropriate therapies.

All the contributing authors have recognized expertise in the areas of pulmonary disease and immune pathways. Distinct and up-to-date reviews are provided on each subject. Each reviewer has considered the advent of molecular tools, transgenic models, and genomic approaches, which may ultimately be exploited to contain the asthma epidemic.

Patricia W. Finn, MD  
*Pulmonary and Critical Care Division*  
*Brigham and Women's Hospital*  
*75 Francis Street*  
*Boston, MA 02115, USA*  
*E-mail address: pwfinn@rics.bwh.harvard.edu*