EDITORIAL

CLIMATIC CHANGE AND ASTHMA

Different factors condition the appearance of allergic diseases of the respiratory system and its related structures (rhinitis, conjunctivitis, sinusitis, tracheobronchitis, eosinophilic bronchitis, asthma). Atopia is the principal predisposing factor in 70 % of patients, and is attributable to different genetic mutations that increase bronchial reactivity and modify host immune response (the basis of allergic disease). Sensitization to aeroallergens occurs through inhalation, or as a consequence of direct contact with the conjunctival mucosa.

In recent years there has been a considerable increase in these illnesses that obviously cannot be attributed to changes in genetic predisposition, of a familial nature, but which must be due to other factors that are effectively amenable to change[1,2]. Such factors comprise exogenous environmental agents – some of which are directly related to the degree of exposure to allergens (domestic or outdoor) – or environmental irritants capable of causing mucosal inflammation. These factors constitute the pathogenic basis of such respiratory disorders, where occupational rhinitis and asthma stand out.

Socioeconomic conditions largely condition the aeroallergen contents found in the home, such as mites and fungi, in correspondence with the domestic elements that facilitate their development (e.g., rugs, curtains, heating, refrigeration, humidity, etc.), or the presence of pets. However, exposure to pollen, as the prevalent aeroallergens in many patients, is dependent upon other factors – particularly of a climatic nature. The prevalence of sensitization to pollen is largely dependent upon the climatic conditions of the different regions involved; in this sense, in one same country it is not uncommon to find important variations in the incidence of pollen allergy among different geographical areas – as a result both of the predominance of certain types of pollen, and of the time or season of year in which they manifest[3,4]. Climate therefore undoubtedly plays an important role in the incidence of respiratory allergic disease.

Temperature, the degree of humidity, rain or wind all exert a categorical influence upon pollination. Accordingly, variations in these climatic phenomena are decisive for the seasonality, prevalence and severity of these disease processes.

It is very possible that the climatic change experienced in recent years is directly related to the aforementioned increase in the incidence of asthma and of other allergic diseases – due not only to the effects upon pollination and fungal sporulation[5], but also to the rise in contaminants as a consequence of global warming (carbon dioxide, methane, ni-

trogen oxide, sulfur dioxide, ozone, chlorofluorocarbons (CFCs), particulate matter: PM-10), as has been shown by a number of studies[1,6-8].

As a call to attention, the recent expert report of the WMO and UNEP (IPCC)[9] clearly shows that the climatic change of recent years will exert a decisive effect upon the living conditions of the world's population. Moreover, it can be affirmed that this effect will be negative, if human life style is not adjusted in time (habitat, environment, energy sources, etc.) to meet the new situation. The increase in harmful atmospheric gases, changes in humidity, and water mass movements (rising sea levels, floods) as a result of the melting of the glaciers in response to rising temperatures all tend to alter the ecosystem – with important changes in climate that vary according to the geographical setting considered[10]. The health repercussions of such climatic change are clear – affecting mainly the cardiovascular and respiratory systems.

Considering the predominant sensitization to pollen among a large proportion of patients with respiratory allergic disease, the changes in the aerobiology of pollen will have an important impact upon the incidence of such illnesses. The increase in allergizing potential, associated with temperature rises, shown by Betula pubescens spp*[11] and possibly also applicable to other types of pollen[12,13], constitutes a risk of sensitization on the part of other atopic individuals, as well as for those already sensitized and who may react more seriously in situations of pollination. A similar effect may be produced by the rise in concentration of different pollens – to which CO_2 contributes in combination with the rise in temperature. Likewise, changes have been observed in the pollen season and in the distribution of flora, possibly due to the influence of temperature, the degree of humidity, and the concentration of CO_2[5].*

Although global climate change is believed to still be in its early stages, some authors have already reported an increase in hospital admissions, or changes in seasonality, that may be related to this problem[1,2,4,7,8,14].

It is now up to the governments, with the recommendations of the experts, to implement the required measures to counter global warming as far as possible. Research into the changes in epidemiology, seasonality and severity of diseases related with climatic change (allergic disorders in our case), is the task facing physicians.

F. Muñoz-López

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