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an independent review

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Breathing easy

The EAACI's Cezmi Akdis, Nikos Papadopoulos and Victoria Cardona discuss a proactive approach for optimising preventive and treatment strategies for asthma and rhinitis...

Allergic diseases are a major health problem in Europe, and including asthma, are the most frequent chronic disease in children. Overall, it is estimated that allergies affect one hundred and fifty million people in Europe, and the trend is set to increase. Furthermore, despite the general impression that these might be mild conditions, they can seriously affect quality of life, impacting on school and work output. For example, allergic rhinitis in students increases the chance of dropping a grade in summer examinations by 40%, while adding a sedative drug may further increase this to 70%.

Patients with allergies do not only suffer from a debilitating disease that has a major impact on their quality of life, career progression, personal development and lifestyle choices, but they also constitute a significant burden on health economics and macroeconomics due to billions of days of lost productivity and absenteeism. Given that allergy triggers – including urbanisation, industrialisation, pollution and climate change – are not expected to change, the only way forward is strengthening and optimising preventive and treatment strategies. Therefore, proactive approaches directed at combating these diseases are more than necessary.

Allergy incidents and their increase have an adverse effect on the European economy due to both direct costs (for asthma alone, pharmaceutical cost stands at €3.6bn per year and those to healthcare services at €4.3bn) and, perhaps even more so, due to indirect costs. In total, 15% of the population receiving long-term treatment in Europe are doing so due to allergies and asthma, making them the most common reasons for treatment among the young age group. Among the direct medical costs, diagnostic tests, consultations and medication represent the primary components, while a major factor is hospitalisation, which is usually associated with severe exacerbations of asthma or anaphylactic reactions. Moreover performance deficits, loss of productivity and absenteeism are closely linked to allergy suffering and have a major effect on macroeconomics.

The economic scale

Asthma and rhinitis are estimated to result in more than one hundred million lost workdays and missed school days each year in Europe (not only children absent from school on any given day, but also parents' productivity or

absence from work). Recently, it became apparent that in addition to absenteeism, hundreds of millions of euros are also lost by 'presenteeism', when people go to work but are unable to perform to their full capacity. The total cost of asthma alone is estimated at more than €25bn annually. The cost of rhinitis is probably higher but unfortunately, large-scale socioeconomic studies in Europe are lacking. Unpublished investigations by the Global Allergy and Asthma European Network (GA²LEN) calculate the current loss to employers due to untreated allergic rhinitis-related presenteeism to be approximately €100bn annually. This is based on employment figures from European statistics, but does not measure the loss to society due to presenteeism at schools or universities. Understanding and monitoring the costs of allergic diseases should be a priority. Healthcare systems that are not taking into account the rapid increases in prevalence, severity and cost of allergies are in danger of collapsing from these conditions alone.

Although allergic diseases have been described in ancient texts, even at the beginning of the 20th Century they were considered rare. Allergic rhinitis was termed 'hay fever', illustrating the concept at the time that this was some type of 'infectious disease'. In the previous decades, substantial knowledge on why and how allergies are developed has been unravelled. It is a type of faulty response to harmless substances such as pollens, house dust mites or foods, and tends to run in families, with several predisposing genes having been identified. Additionally, it seems clear that the level of exposure to different substances confers an increased risk to develop allergic diseases. In this regard, the hygiene hypothesis states that limited contact with microorganisms during the development of the immune system results in a suboptimal 'training' and favours allergic diseases such as rhinitis or asthma.

Developments in treatment

Drug therapy to control the symptoms elicited by allergic diseases is very effective. However, these treatments are only directed at diminishing the inflammation or blocking the symptoms of the disease. This is, of course, a necessary strategy, but acting on the cause of diseases, whenever possible, is the objective of all medical professionals. Allergen immunotherapy is currently the only treatment that is directed at the cause of allergies, combating them



Victoria Cardona, Cezmi Akdis and Nikos Papadopoulos during the presentation of the European Declaration on Allergen Immunotherapy at the EAACI Congress 2011 in Istanbul

beyond symptoms. Allergen immunotherapy has been shown to be able to change the course of the disease, improving symptoms and decreasing the need for medication. In some studies, its effects have been demonstrated to persist even after the actual treatment is interrupted. Therefore, it is considered a disease modifying therapy. Allergen immunotherapy was initially developed 100 years ago in parallel to anti-infectious vaccines, when the causal substances and underlying mechanisms were not known. After empirically observing that these ‘desensitising’ vaccines were clinically effective, the underlying mechanisms of action were discovered. It now appears clear that allergen immunotherapy acts by increasing specific tolerance to the allergen by inducing a certain type of cell, known as regulatory T cells, which prevent the development of allergic reactions against that allergen. This results in a progressive decrease in symptoms upon exposure to the allergen, and a subsequent improvement in the patient.

‘...limited contact with microorganisms during the development of the immune system results in a suboptimal ‘training’ and favours allergic diseases...’

Progress in research

Allergen immunotherapy has not received adequate attention from the European research funding bodies, despite the fact that this could be one of the most rewarding fields in terms of return, translational value and European integration. However, it is also an area in which Europe is recognised as a leader worldwide. Research in the field of allergen immunotherapy is extremely difficult, basically because the effects of the treatment are only measurable after a relatively long period of time, usually after one year, achieving an optimal effect after three to five years. This fact hampers the possibility of undertaking

large independent trials, which need substantial economic investment.

Until recently, most of these trials have been conducted by allergen manufacturers. In this regard, the European Academy of Allergy and Clinical Immunology (EAACI) is actively working to increase understanding of this situation in order to promote policies to support the knowledge and use of allergen immunotherapy and to prioritise funding of research in the field. One of the initiatives that has been undertaken is the development of the European Declaration on Allergen Immunotherapy, which was signed by EAACI, GA²LEN and the European Federation of Allergy and Airway Diseases Patients Association (EFA) with the support of most of the National Allergy Societies, and published in June 2011. The document aims to illustrate the current status of the allergic epidemic in Europe; highlight the impact of such diseases on patients’ health and overall quality of life; provide data regarding the socioeconomic impact for society; and raise awareness among relevant governing bodies about the need to undertake proactive initiatives to fight allergies.

The European Declaration on Allergen Immunotherapy has not only been forwarded to members of the European Parliament, but also to politicians at a national level, in order to synergise actions in the field. Consequently, Europe’s policymakers need to coordinate actions and improve individual and public health in allergy by:

- Promoting immunotherapy awareness;
- Updating national healthcare policies to support allergen immunotherapy;
- Prioritising funding for immunotherapy research;
- Monitoring the macroeconomic and health economic parameters of allergy; and
- Streamlining medical disciplines and specialties.

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