

Why is Allergy Increasing?

Advice provided by allergyuk.org



The latest surveys show that the rates of allergy are increasing throughout the world, affecting up to 30-35% of people at some stage in their lives. This increase was initially seen in countries such as the UK, Europe and USA, but can now be found in all countries undergoing industrial development. The pattern of allergy is also changing – initially, the increase was in asthma and allergic rhinitis (hay fever). However, recent studies have confirmed a significant increase in the incidence of food allergies, in particular amongst children. In the UK, it is estimated that up to 50 per cent of children are diagnosed with an allergic condition.

Allergy is caused when the body's immune system reacts to a normally harmless substance, such as pollen, food, or house dust mite. The body identifies the substance as a threat, and produces an inappropriate, exaggerated response to it. What we are only beginning to understand is what tips the balance in favour of allergy. Researchers have suggested that a number of factors might cause someone to become allergic:

Genetics

Children born into families where allergies already exist have a higher than average chance of developing allergies themselves. In the UK today, children have a one in five predisposition to develop an allergy. However, the risk is doubled if one parent has an allergy (particularly if that parent is the mother). If both parents have allergies, the risk is

increased to 60-80 per cent. This increased tendency for individuals to develop allergies because of their genes is known as being atopic.

Atopy results in an increased risk to any allergy, not just a specific type of allergic disease. So a child whose parents suffer from hay fever is no more likely to develop hay fever than asthma or food allergy. Similarly, the severity of the allergy in a child bears no relation to the severity of the parents' allergic disease.

However, within the human population, changes in genes take many hundreds of years to develop consequences in disease. So atopy/genetic tendency alone cannot account for the current increase in allergy seen over the past few decades. Current research is investigating the effect of the environment in which we live, on genetic factors. It is now clear that many genes can be 'turned on or off' by environmental factors. For example, viral infections are able to modulate our immune systems by switching certain genes on or off, promoting an allergic tendency in immune cells.

The Hygiene Hypothesis

This suggests that the immune system needs to come into contact with a variety of micro-organisms and bacteria while it is developing at the infant stage, in order that it responds appropriately later in life. We now live in an environment where we use cleaners containing anti-microbial agents, and food preparation is more hygienic than



For more help, contact the Allergy UK helpline:
9am to 5pm,
Monday to Friday
01322 619 898

Key facts

> Allergy affects 30-35% of people at some stage of their lives

> In the UK up to 50% of children are diagnosed with an allergic condition

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Last review date: 09/2015

Next review: 09/2018

VERSION 3

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ever. Whilst children living on farms were previously directly exposed to animals, and their environment contained a range of microbial agents and plant derived agents, most of us now live in cities where we have minimal exposure to animals. We know that children with regular contact with farm animals have a lower incidence of allergy. Inadequate exposure to environmental micro-organisms may therefore result in the immune system of atopic children developing a tendency towards allergy.

Over the last 100 years, vaccines and antibiotics have radically changed our lives and defeated many infections that previously killed large numbers of the population. There have been attempts to extend the hygiene hypothesis to include vaccinations suggesting that vaccines contribute to the increase in allergic diseases. However robust epidemiological and statistical studies have not substantiated this claim. (De Stefano et al 2002; Koppens S et al 2004; Mc Keever TM et al 2004; Nilsson L et al 1998; Sanchez-Solis M & Garcia -Marcos L 2006). One example of the lack of association between vaccinations and increase in allergic diseases comes from epidemiological studies on the unification of Germany. Prior to the unification, almost 100% of children were compulsory immunized and in this country there was a low incidence of allergy. After the unification, allergic diseases increased despite vaccination ceasing to be compulsory. Modern living conditions, rather than vaccinations, are responsible for the high allergy rate.

In summary, vaccinations do not have an adverse effect on the incidence of allergic diseases and are essential to protect the health of our children and the nation, eradicating virulent killer diseases.

Changes in the foods we eat

Our diets tend to include more processed foods and less fruit and vegetables. It has been suggested that the increase in food allergy might be due to

more allergenic foods, such as peanuts, in our diet. However, there is no evidence that this has happened, and many cultures traditionally eat high amounts of certain allergenic foods, for example, peanuts in some Asian communities. A number of research teams are investigating whether reduced levels of nutrients – in particular vitamin D, omega-3 fatty acids (in fish) or antioxidants – might contribute to the development of allergy. While a diet low in oily fish has been associated with increased risk of childhood asthma and allergies in some studies, one study giving extra fish oils to babies did not prevent the occurrence of allergies. Vitamin D is important for the immune system and in early lung development. Deficiency of vitamin D is increasing throughout the world mainly because of sunlight avoidance through spending more time indoors or using sun-screen to reduce risk of skin cancer (most vitamin D is produced by the action of natural sunlight on skin). However, the data linking vitamin D deficiency to allergy is conflicting. Furthermore, giving pregnant women vitamin D supplements does not appear to have a consistent effect on reducing the risk of allergies in children.

Changes in how we are exposed to food allergens

A large number of cosmetic products include ingredients derived from nuts and other potentially allergenic foods. Some researchers suggest that exposing the body to potential allergens through skin creams may cause the development of allergy in people at risk of allergy. There is only a limited evidence for this, and the situation is likely to be much more complicated than just applying the wrong sort of cream to a child's skin.

Environmental factors

Our environment today is very different from 50 years ago. While there is evidence that pollutants

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can exacerbate existing airway allergy, the question of whether pollution can cause new allergy remains controversial. One hypothesis for which there is accumulating data, is that the increase in allergy mirrors our declining exposure to bacteria and other micro-organisms in our environment. This has led to the Hygiene Hypothesis.

Conclusion

An intriguing possibility is that many of the above dietary and environmental factors may increase allergy risk by regulating genes which promote an allergic-type immune system. Hopefully, our understanding of epigenetics will increase over the coming years, offering new potential strategies by which we might be able to prevent allergy.



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