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MEDICAL GROUP

GLOBAL JOURNAL OF Allergy OPEN ACCESS JOURNAL

ISSN: 2455-8141 DOI: https://dx.doi.org/10.17352/allergy

Perspective Study

The impact of modern allergens on allergic diseases: A prospective

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Received: 28 December, 2020
Accepted: 29 December, 2020
Published: 30 December, 2020

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Introduction

Allergy is a common condition that affects millions of people worldwide. It is caused by the immune system's abnormal response to harmless substances in the environment, known as allergens. The prevalence of allergic diseases has been increasing in recent decades, and this has been attributed to changes in lifestyle, diet and exposure to modern allergens [1].

Modern allergens are substances that have emerged or become more prevalent in recent years and are known to trigger allergic reactions in susceptible individuals [2]. These allergens can come from a variety of sources, including food, medications, occupational exposure and environmental factors such as pollution [3]. For example, the use of antibiotics in food production has been linked to the emergence of antibiotic-resistant bacteria, which can trigger allergies in some people [4].

Other modern allergens include new types of food additives and preservatives, such as artificial sweeteners and food colorings, which have been associated with allergic reactions [5]. Similarly, exposure to new chemicals in consumer products, such as fragrances and cleaning agents, has been linked to the development of allergic reactions in some individuals [6].

Furthermore, changes in lifestyle and diet have also been implicated in the rise of allergies. For example, the Western diet, which is high in processed foods and low in fiber, has been associated with an increased risk of allergies and asthma [7]. Similarly, changes in the living environment, such as reduced exposure to microorganisms, have been linked to an increased risk of allergies [8].

Modern allergens are a growing concern for public health. Their sources are diverse and complex, and their impact on human health is significant. Further research is needed to better understand the mechanisms underlying the rise of allergies and to develop effective strategies for prevention and treatment.

What are allergens?

Allergens are substances that can trigger an allergic response in susceptible individuals [9]. They can come in many forms, such as pollen, dust mites, animal dander, mold, and food [10]. Allergens are usually harmless to people who do not have allergies, but they can cause a range of symptoms in those who are sensitive to them, including sneezing, runny nose, itchy eyes, skin rashes, and breathing difficulties [11].

The immune system is responsible for protecting the body against harmful invaders such as bacteria and viruses [12]. However, in people with allergies, the immune system mistakes harmless substances for dangerous invaders and produces an exaggerated response [13]. This response can cause inflammation and other symptoms associated with allergies [14].

What are modern allergens?

One of the most significant modern allergens is air pollution. Air pollution can exacerbate existing allergies and

Citation: Sai YRKM (2020) The impact of modern allergens on allergic diseases: A prospective. Glob J Allergy 6(1): 001-004.
DOI: https://dx.doi.org/10.17352/2455-8141.000023

cause new allergies to develop [15]. Studies have shown that exposure to air pollution can increase the risk of asthma and other respiratory allergies [16]. In addition, exposure to certain chemicals in the environment, such as pesticides and industrial chemicals, has been linked to the development of allergies [17].

Food allergens have also become more prevalent in recent years. The rise in food allergies has been attributed to changes in the modern diet, such as increased consumption of processed foods and the introduction of new foods into the diet [18]. Common food allergens include peanuts, tree nuts, shellfish, milk, and soy.

Another source of modern allergens is urbanization. As more people move to cities, they are exposed to new allergens that are found in urban environments. For example, cockroach allergens are more prevalent in cities than in rural areas, and exposure to cockroach allergens has been linked to an increased risk of asthma [19].

Sources of modern allergens

Modern allergens can come from a variety of sources. Some of the most common sources include:

1. Air pollution - Air pollution is a major source of modern allergens. Pollutants such as particulate matter, ozone, and nitrogen dioxide can exacerbate existing allergies and cause new allergies to develop [20].

2. Industrial chemicals - Exposure to certain chemicals in the environment, such as pesticides and industrial chemicals, has been linked to the development of allergies [21].

3. Food additives - Food additives such as preservatives, colorings, and flavorings have been implicated in the development of food allergies [22].

4. Processed foods - Processed foods are often made with a variety of ingredients, many of which can trigger allergies. In addition, the processing of foods can alter the proteins in them, making them more allergenic [23].

5. New foods - The introduction of new foods into the diet can lead to the development of allergies. For example, the consumption of soy products has increased in recent years, and this has been linked to a rise in soy allergies [24].

6. Urban environments - Urban environments are a source of many new allergens. For example, exposure to cockroach allergens is more common in cities than in rural areas [25].

Impact of modern allergens on human health

Modern allergens have a significant impact on human health, and their prevalence has led to an increase in the number of people affected by allergies. Allergic diseases such as asthma, allergic rhinitis, and food allergies can have a significant impact on a person's quality of life and can lead to serious complications in some cases.

Asthma is a chronic respiratory disease that is characterized by inflammation of the airways. It is one of the most common allergic diseases and affects an estimated 300 million people worldwide. Exposure to modern allergens such as air pollution and industrial chemicals has been linked to an increased risk of asthma. Studies have also shown that exposure to allergens in the workplace can lead to occupational asthma, which is a type of asthma that is triggered by exposure to specific allergens in the workplace [26].

Allergic rhinitis, also known as hay fever, is another common allergic disease that affects millions of people worldwide. It is characterized by inflammation of the nasal passages and is triggered by exposure to allergens such as pollen, dust mites, and animal dander. Exposure to modern allergens such as air pollution and industrial chemicals has been linked to an increased risk of allergic rhinitis [27].

Food allergies are also becoming more common, and they can have serious consequences for those affected. Food allergies occur when the immune system mistakenly identifies a food protein as harmful and produces an allergic response. This can lead to symptoms such as hives, swelling, and difficulty breathing. In severe cases, food allergies can lead to anaphylaxis, which is a life-threatening allergic reaction that requires immediate medical attention [28].

Prevention and management of modern allergens

1. Avoidance - Avoidance of allergens is the most effective way to prevent allergic reactions. This can involve avoiding exposure to specific allergens such as pollen, dust mites, and animal dander. In addition, avoiding processed foods and food additives can help reduce the risk of food allergies [29].

2. Immunotherapy - Immunotherapy involves exposing the immune system to small amounts of allergens over time, with the aim of reducing the severity of allergic reactions. Immunotherapy is often used to treat allergies such as allergic rhinitis and asthma [30].

3. Medication - Medications such as antihistamines, corticosteroids, and bronchodilators can help manage the symptoms of allergies. These medications can be used to reduce inflammation, relieve congestion, and improve breathing [31].

4. Alternative therapies - Some alternative therapies, such as acupuncture and herbal remedies, have been suggested as potential treatments for allergies, but more research is needed to determine their effectiveness [32].

Conclusion

In recent decades, there has been a significant increase in the prevalence of modern allergens, which has become a major health concern. This is due to changes in human

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activity, lifestyle, and the environment. These allergens have the potential to cause allergic diseases such as asthma, food allergies, and allergic rhinitis, among others. To mitigate the impact of allergic diseases, it is crucial to implement effective strategies such as avoidance, medication, immunotherapy, and environmental control measures to prevent and manage modern allergens.

Moreover, there is a need for further research to understand the mechanisms of modern allergens and their impact on human health. This will help in developing effective prevention and management strategies for allergic diseases. It is essential to educate the public about the significance of modern allergens and their impact on human health. This will create awareness and help individuals understand the importance of avoiding allergens and seeking appropriate medical care when necessary.

Overall, modern allergens are a growing health concern, and it is imperative to take action and address this issue. This requires a collective effort from healthcare providers, individuals, and policymakers. By working together, we can reduce the burden of allergic diseases and improve the quality of life for those affected.

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