Short Communication
Volume 13:2, 2023

Journal of Pulmonary & Respiratory Medicine

ISSN: 2161-105X Open Access

External Exposome Diseases, as well as Allergic Respiratory and Skin Diseases

Valente J*

Department of Pulmonary and Respiratory Medicine, University Health Network, Toronto, ON, Canada

Introduction

Allergic illnesses affect a major portion of the population, causing a huge socioeconomic burden, and their frequency has been increasing in recent decades. This is related to environmental changes, as indicated below, however their precise role is unknown. According to the World Health Organization (WHO), there are presently at least 300 million people with asthma and more than 300 million people with allergic rhinitis worldwide, and by 2050, half of the world's population will have experienced an allergic condition. As determined by skin prick test response positivity or positive specific IgE levels, up to 50% of the general population already has allergic sensitization to at least one allergen [1].

To completely understand development and therefore allergy epidemics, it has recently been clear that the exposome must be considered. The exposome is divided into three broad domains: Specific external, nonspecific external, and interior [2]. Exposures to particular external environmental elements (primarily chemical, biological, occupational, and physical exposures, including nutrition, drug, and consumer products) are included in the external exposome, as are nonspecific general exposures.

Description

Respiratory allergy

However, useful assessment of a subject's exposure may include a combination of elements from the two domains because they can be considered as both overlapping and intertwining, and it can be difficult to place a given exposure into one domain or the other. The internal exposome encompasses internal chemical environments determined by internal processes as measured by ad hoc omics methods that evaluate proteins, lipid mediators, xenobiotics, and their metabolites. The internal exposome is unique to each subject's health status and genome, among other things. There is also evidence that various environmental factors can influence the epigenome, causing changes in a chromosome that affect gene activity and expression, hence altering the risk of allergic disorders. Recent research has showed that air pollution can affect the epigenome in foetal blood. However, little is known about the ramifications of the relationship between allergen exposure and allergy sensitization and epigenome modifications. These modifications, like those caused by prenatal tobacco smoke exposure, may have a trans generational impact. Finally, it is well accepted that both the host microbiome and external microbial exposure have a role in increasing vulnerability to allergy diseases, particularly during childhood [3].

Aeroallergen exposure is widely known to be linked to exacerbations and the development of clinical allergy. In general, indoor allergens are connected to the development of asthma more strongly than outdoor allergen sensitivity associated with hay fever. The study of the skin's immunological response to allergens is still in its early stages [4]. Several allergen characteristics promote barrier breakdown and cutaneous sensitivity. Furthermore, there is evidence that the dermal route can enhance allergy tolerance in healthy skin.

The macro mechanisms and micro mechanisms underlying the impact of the external specific exposome on allergic disorders, with a focus on new findings on aeroallergens and air pollution and their implications on respiratory and skin allergies. Following that, we will emphasise the significance of the nonspecific external exposome by delving into the effect of climate change, urbanisation, and biodiversity loss, all of which influence indirectly on allergies by raising their risk factors. Because of their rapid evolution, these are the most significant challenges to be tackled in the near future [5].

Allergens and air pollution are well-known risk factors for allergic disorders. Everyone is exposed to a mixture of allergens and air pollution that changes frequently throughout the day, travelling between indoor and outdoor locations, urban and rural areas, and seasons [6]. Outdoor air and its content "contaminate" indoor spaces since they are not hermetically sealed; additionally, climatic and indoor variables alter concentrations and the exchange of these factors in and between the two environments. To complicate matters further, all of these elements can interact before coming into contact with humans, or they can operate synergistically on the mucosa.

The link between allergen exposure, sensitization, and allergy, on the other hand, is likely to be much more complex than previously imagined. In a recent evaluation of asthma risk factors, for example, findings supporting the idea of sensitization and allergen exposure as a substantial risk factor for the development of asthma were classed

***Address for Correspondence:** Valente J, Department of Pulmonary and Respiratory Medicine, University Health Network, Toronto, ON, Canada, E-mail: valentej@gmail.com*

Received: 23 January, 2023, Manuscript No. JPRM-23-87691; **Editor assigned:** 27 January, 2023, PreQC No. JPRM-23-87691 (PQ); **Reviewed:** 13 February, 2023, QC No. JPRM-23-87691; **Revised:** 12 April, 2023, Manuscript No. JPRM-23-87691 (R); **Published:** 20 April, 2023, DOI: 10.37421/2161-105X.2023.13.650

as inconsistent. Birth cohort studies suggest that time, allergen type, and degree of sensitization is all important 30 and can explain the conflicting results of studies on risk factors for allergy disease development.

Chemical contaminants in the atmosphere

Chemical air pollutants with levels that are still of concern, especially in industrialized countries, are among the environmental changes suspected to be primary drivers of the increasing trend of allergy disorders. Nitrogen Dioxide (NO_2), Ozone (O_3), volatile organic compounds, and especially Particulate Matter (PM), which is diverse in size and content, are among the air pollutants created by both natural and human sources. Fine PM from diesel exhaust, for example, contains Polycyclic Aromatic Hydrocarbons (PAHs).

Because many pollutants are GHGs, climate change can have an impact on air quality. Global warming will cause longer periods of O_3 peaks due to increased sunshine and higher temperatures in metropolitan areas. Higher concentrations of gases and particles are projected as a result of increased human activity and transportation in large cities, where the vast majority of the world's population will be obliged to dwell in the long run due to climate change related problems such as sea level rise. Finally, due to deserts and wildfires, particle concentrations will rise [7].

Despite the fact that buildings constructed to operate under "old" climatic circumstances may not be as efficient under new conditions, impacting the health of its occupants, the influence of climate change on interior air quality has gotten very little attention [8]. Changes in outdoor pollutant concentrations caused by changes in atmospheric chemistry or steps to reduce energy use in buildings, such as decreasing ventilation rates, can induce an increase in indoor chemical matter, organic matter, and PM.

There is a growing recognition among the scientific and policy communities that efforts to address climate change should focus not only on significantly reducing major greenhouse emissions like CO_2, but also on near-term actions to reduce levels of those climate pollutants that remain in the atmosphere for much shorter periods of time. Methane, black carbon, and some hydrofluorocarbons are the principal short lived climatic pollutants, with air lifetimes ranging from a few days to a few decades [9]. To date, short lived climatic pollutants have been blamed for 30% to 40% of global warming. Actions to reduce emissions might cut the amount of warming that occurs over the next few decades in half.

Conclusion

Significant data suggests that a wide range of environmental risk factors and interactions contribute to allergy illnesses, highlighting the need of evaluating the external exposome in the etiopathogenesis of these diseases. This could improve understanding of these illnesses and pave the path for tailored preventative measures that take lifestyle and socioeconomic factors into account.

References

1. Agache, Ioana, Rachel Miller, James E Gern, and Peter W Hellings, et al. "Emerging concepts and challenges in implementing the exposome paradigm in allergic diseases and asthma: A Practall document." *Allergy* 74 (2019): 449-463.
2. Stefanovic, Nicholas, Alan D Irvine, and Carsten Flohr. "The role of the environment and exposome in atopic dermatitis." *Curr Treat Options Allergy* 8 (2021): 222-241.
3. Burbank, Allison J, Amika K Sood, Matthew J Kesic, and David B Peden, et al. Environmental determinants of allergy and asthma in early life." *J Allergy Clin Immunol* 140 (2017): 1-12.
4. Annesi-Maesano, Isabella, Manja Fleddermann, Mathias Hornef, and Erika Von Mutius, et al. "Allergic diseases in infancy: I-Epidemiology and current interpretation." *World Allergy Organ J* 14 (2021): 100591.
5. Litman, Thomas. "Personalized medicine concepts, technologies, and applications in inflammatory skin diseases." *Apmis* 127 (2019): 386-424.
6. Dai, Dongjuan, Aaron J Prussin, Linsey C Marr, and Peter J Vikesland, et al. "Factors shaping the human exposome in the built environment: opportunities for engineering control." *Environ Sci Technol* 51 (2017): 7759-7774.
7. Wu, Allison C, Amber Dahlin, and Alberta L Wang. "The role of environmental risk factors on the development of childhood allergic rhinitis." *Children* 8 (2021): 708.
8. Haahtela, Tari, Harri Alenius, Jenni Lehtimaki, and Aki Sinkkonen, et al. "Immunological resilience and biodiversity for prevention of allergic diseases and asthma." *Allergy* 76 (2021): 3613-3626.
9. Xie, Zhi-Juan, Kai Guan, and Jia Yin. "Advances in the clinical and mechanism research of pollen induced seasonal allergic asthma." *Am J Clin Exp Immunol* 8 (2019): 1-8.

How to cite this article: Valente J. "External Exposome Diseases, as well as Allergic Respiratory and Skin Diseases." *J Pulm Respir Med* 13 (2023): 650.