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Cancer remission and the allergy cascade

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Abstract

Cancer patients can achieve remission, during which all signs and symptoms of the cancer disappear. However, complete remission is often not permanent, and the disease may reappear. Interestingly, the allergy cascade may protect against cancer recurrence. Adjuvant immunotherapy that induces specific allergies after cancer remission—also known as forced atopy—may prevent the recurrence of life-threatening cancer.

Keywords: Adjuvant Immunotherapy; Allergies; Atopy; Cancer Recurrence; Cancer Remission

1. Introduction

Cancer is one of the leading causes of death globally [1]. The five-year survival rate for cancer patients has significantly improved over time based on advancements in early detection, treatment options, and medical technology [2, 3]. When cancer treatments are successful, it is crucial to have preventative measures to inhibit the risk of cancer recurrence.

The American Cancer Society advises that cancer survivors in stable health after treatment should adhere to nutrition guidelines for cancer prevention, ensure appropriate vitamin and supplement intake to prevent unforeseen adverse effects, and engage in moderate physical activity [4].

The Mayo Clinic staff recommends additional strategies to help reduce the risk of cancer recurrence. These include maintaining a healthy weight [5], avoiding alcohol and smoking [6], and staying in touch with healthcare providers [7].

The MD Anderson Cancer Center has developed cancer survival algorithms that depict best practices for patients under surveillance for cancer recurrence and secondary cancers [8].

In continuation, there is a need for adjuvant therapies to bolster the immune system to prevent cancer recurrence. The relationship between allergies and cancer is complex. Allergies may have a protective effect against some cancers. For example, attributes of the allergy cascade include enhanced immune surveillance and decreased immune escape by cancer cells [9].

2. Discussion

Cancer may recur for several reasons after a diagnosis of remission. Dormant cancer cells can survive and later multiply [10]. Additionally, cancer cells may spread to other parts of the body and remain undetected [11]. Some cancer cells may also evade removal during surgery [12]. Furthermore, cancer cells that form quickly and immune escape are more likely to survive and propagate over time [13].

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Can the allergy cascade inhibit cancer recurrence? The immunosurveillance hypothesis suggests that allergies may reduce the risk of cancer because the immune system becomes more responsive, which can inhibit cancer development [14]. The prophylaxis hypothesis suggests that allergies may prevent cancer by removing potential carcinogens through the physical effects of allergy symptoms [15]. The allergy-assisted cancer therapy hypothesis suggests that forced atopy may impede bacterial contributions and disrupt the extracellular matrix, complicit with immune tolerance [16].

Can the allergy cascade inhibit cancer and its recurrence? Described below are several cancers that may benefit from allergy adjuvant immunotherapy.

2.1. Acute Lymphoblastic Leukemia

Allergies may be associated with a reduced risk of childhood acute lymphoblastic leukemia [17].

Acute lymphoblastic leukemia is a type of blood cancer where the bone marrow produces too many immature white blood cells, called lymphoblasts, which rapidly build up and prevent the body from making healthy blood cells, leading to symptoms like fatigue, easy bruising, fever, and swollen lymph nodes; it's often diagnosed in children and is considered a fast-progressing cancer requiring prompt treatment [18]. After acute lymphoblastic leukemia cancer remission, the recurrence rate is about 50% [19].

2.2. Acute Myelocytic Leukemia

The risk of acute myelocytic leukemia declined with the total number of specific allergies [20].

Acute myelocytic leukemia is a fast-growing blood cancer where the bone marrow produces an excessive amount of abnormal, immature white blood cells, called myeloblasts, which rapidly build up in the blood, leading to a deficiency in healthy blood cells and often cause symptoms like fatigue, easy bruising, and frequent infections if left untreated; it's considered a serious condition requiring prompt medical attention [21]. After acute myelocytic leukemia cancer remission, the recurrence rate is about 40% to 50% [22].

2.3. Breast Cancer

A history of allergies may be associated with a modest reduction in breast cancer risk [23].

Breast cancer is a disease where cells in the breast tissue grow abnormally and uncontrollably [24]. After breast cancer remission, the recurrence is months to years. Inflammatory breast cancer and triple-negative breast cancer are more likely to reoccur [25].

2.4. Colon Cancer

The allergy cascade may be associated with a decreased risk of colon cancer due to the heightened immune response associated with atopy [26].

Colon cancer is a type of cancer that develops in the colon, or large intestine, and can also occur in the rectum [27]. After colorectal cancer remission, the recurrence rate is about 5% to 42% [28].

2.5. Gastrointestinal Cancer

Allergic rhinitis may reduce the risk of gastrointestinal cancer [29].

Gastrointestinal cancer occurs when healthy cells in the digestive system grow abnormally and form tumors. These tumors can develop in many parts of the digestive system, including the esophagus, stomach, pancreas, small intestine, large intestine, rectum, and anus [30]. After stomach cancer remission, the recurrence rate is about 14% to 60% [31].

2.6. Glioblastoma

A history of allergies is associated with a decreased risk of developing glioblastoma, an aggressive and common brain tumor [32].

Glioblastoma is a fast-growing, malignant brain tumor that originates in the brain's glial cells [33]. After glioblastoma cancer remission, the recurrence rate is about 90% [34].

2.7. Head and Neck Cancer

Allergy symptoms may be associated with a reduction in the risk of head and neck cancer [35].

A type of cancer that develops in the tissues of the head and neck area, including the mouth, throat, sinuses, salivary glands, and voice box (larynx), most commonly starting in the squamous cells lining these areas [36]. After head and neck cancer remission, the recurrence rate is about 50% [37].

2.8. Low-Grade Glioma

Elevated total immunoglobulin-E may be associated with a reduced risk of low-grade glioma [38, 39].

A low-grade glioma is a slow-growing, non-aggressive brain tumor that develops from glial cells, which support neurons in the brain and is considered a relatively benign type of brain cancer [40]. After low-grade glioma cancer remission, the recurrence rate is about 50% [41].

2.9. Lung Cancer

Allergies may have a protective role against lung cancer [42].

Lung cancer is a disease where cells in the lungs begin to grow uncontrollably, forming tumors that can spread to other parts of the body. It is the leading cause of cancer death in both men and women [43]. After lung cancer remission, the recurrence rate is about 30–75% [44].

2.10. Melanoma Cancer

Allergies reduce the risk of skin cancer and extracutaneous malignancies [45].

Melanoma is a type of skin cancer that develops when melanocytes, the cells that produce melanin, grow out of control. Melanoma is considered the most dangerous type of skin cancer because it can spread quickly to other organs [46]. After melanoma cancer remission, the recurrence rate is about 50% [47].

2.11. Ovarian Cancer

Allergies may be associated with a decreased risk of ovarian cancer [48].

Ovarian cancer is a type of cancer that occurs when abnormal cells in the ovaries grow and divide uncontrollably [49]. After epithelial ovarian cancer remission, the recurrence rate is about 85% [50].

2.12. Pancreatic Cancer

Allergies may be associated with reduced pancreatic cancer [51].

Pancreatic cancer occurs when malignant cells develop in part of the pancreas. This may affect how the pancreas works, including the functioning of the exocrine or endocrine glands [52]. After pancreatic cancer remission, the recurrence rate is about 36% [53].

2.13. Squamous Cell Cervical Cancer

Pollen allergies may reduce the risk of squamous cell cervical cancer [54].

Squamous cell cervical cancer is a type of cervical cancer that starts in the thin, flat squamous cells that line the outside of the cervix [55]. After squamous cell cervical cancer remission, the recurrence rate is 8% to 10% [56].

2.14. Throat Cancer

Allergies may reduce the risk of throat cancer [57].

Throat cancer generally refers to cancers that start in the pharynx or larynx [58]. After throat cancer remission, the recurrence rate can be as high as 50% [59].

2.15. Urothelial Bladder Cancer

Asthma is associated with a decreased risk of urothelial bladder cancer, especially among aggressive tumors [60].

Urothelial Bladder Cancer starts in the urothelial cells that line the bladder and other parts of the urinary tract [61]. After bladder cancer remission, the recurrence rate is about 30% to 80% [62].

What is an allergy cascade? In the allergic cascade, the primary antibody produced is immunoglobulin E (IgE), which binds to allergens and triggers the release of chemical mediators like histamine, leukotrienes, prostaglandins, cytokines (including IL-4 and IL-5), and various proteases from mast cells, basophils, and other effector cells [63].

Why are allergies helpful in inhibiting cancer recurrence? A study showed that IgE-deficient individuals with absent serum and cell-bound IgE, as suggested by negative type I hypersensitivity skin tests, are at the highest risk for a malignancy diagnosis. In contrast, IgE-deficient individuals with cell-bound IgE depicted through positive type I hypersensitivity skin tests have lower rates of malignancy diagnosis [64].

How might specific allergies be induced to help prevent cancer recurrence? Prolonged and repeated skin exposure to allergens may trigger the allergy cascade. Topical hyper-allergenic compositions (such as lotions and skin creams) containing allergens and immunologic adjuvants may provoke forced atopy [65].

3. Conclusion

Cancer recurrence can be dispiriting and life-threatening. The allergy cascade is an inherent part of everyone's immune system; evidence indicates it may have an anti-cancer effect. Therefore, forced atopy may be an effective adjuvant immunotherapy to inhibit cancer recurrence.

Compliance with ethical standards

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Michael John Dochniak (Co-Founder) of Alleamit Corporation, Minnesota, and the United States of America.

Author Profile

Michael John Dochniak has authored several books on Alzheimer's disease, Artificial Intelligence, Autism Spectrum Disorders, and Climate Change through Cambridge Scholars Publishing and Nova Science Publishers.

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