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(REVIEW ARTICLE)

Allergo oncology: Targeted degranulation

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Abstract

Allergies are an inevitable part of life, no matter where we live. Without a doubt, the symptoms of allergies can cause severe physical and mental suffering. Although medical science has made great strides in suppressing allergy symptoms with medicines, immunotherapies, and virus-like particle technology (i.e., Allergy Vaccines), research indicates that allergies may be nature's cancer immunotherapy. Targeted degranulation explores breaking the immune-tolerance cancer barrier. This review will discuss how IgE-primed effector cells and allergenic vaccines may inhibit solid tumor progression.

Keywords: Allergies; Cancer; Immunotherapy; Skin Cream; Allergenic Vaccine

1. Introduction

AllergoOncology is defined as opposite outcomes of immune tolerance in allergy and cancer [1]. Malignant tumor cellular growth is biologically sustainable through immune tolerance. Immune tolerance occurs when the immune system fails to eliminate growing tumors having mutated proteins and altered antigen expression [2].

AllergoOncology is a type of cancer immunotherapy that uses substances made from living organisms to treat cancer [3]. Cancer immunotherapy has proven challenging as it depends on overcoming multiple mechanisms that mediate immune tolerance [4].

How does the immune system support cancer? Increasing evidence has revealed elevated immunoglobulin (Ig) expression in cancer cells (i.e., Cancer-derived Ig.) Cancer-derived Ig shares identical basic structures with B cell-derived Ig (i.e., IgG1) but exhibits several distinct characteristics, including restricted variable region sequences and aberrant glycosylation. Cancer-derived Ig exerts profound pro-tumorigenic effects *via* multiple mechanisms, including promoting the malignant behaviors of cancer cells, mediating tumor immune escape, inducing inflammation, and activating the aggregation of platelets [5].

How can the immune system be used to suppress cancer? Solid tumors contain B cell infiltrates that could be used as a therapeutic strategy in cancer immunotherapy [6]. B cell-derived IgE antibodies infiltrate the tumor microenvironment and may be used to inhibit cancer cell growth through the allergy cascade. For example, a cancer immunotherapy approach to breaking immune tolerance may be through forced atopy and targeted degranulation. Effector cells associated with humoral immunity are known to permeate solid tumors. Forced atopy using humoral-IgE skin creams may increase the expression of IgE antibodies and IgE-primed effector cells within the tumor microenvironment [7]. When minute quantities of a sensitized allergen (i.e., Allergenic Vaccines) are injected directly into a cancerous tumor, they interact with allergen-specific IgE already bound to effector cells. Subsequent degranulation of these cells releases cytotoxins within the tumor environment to escalate localized inflammation and damage cancer cells. Unlike conventional cancer treatment vaccines that strengthen the body's natural defenses against cancer [8], allergenic vaccines act as immuno-chemotherapy.

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2. Description

Can an underexploited branch of the adaptive immune system help fight cancer? AllergoOncology explores the power of IgE antibodies and their associated effector cells to inhibit cancer. Targeted degranulation cancer immunotherapy with a science-based diet is naturally robust, metabolically expensive, nontoxic, and financially inexpensive [9].

Topical hyper-allergenic compositions explore the formation of in vivo cancer-inhibiting IgE antibodies. The skin cream application allows extended exposure of allergens and immunologic adjuvants to enforce allergen-specific IgE antibody formation and trigger an allergic immune response (Type-I Hypersensitivity) [10]. Specific allergens are selected based on their lack of prevalence in the patient's geographic locale. Although, allergen-specific IgE memory can persist over years or even decades, even without antigenic stimulation [11].

The allergen-specific IgE antibodies bind to the high-affinity receptor FcεRI [12] on effector cells [13] to form IgE-primed effector cells against cancer [14, 15]. Allergen-specific IgE-primed effector cells then infiltrate the tumor microenvironment; degranulation (i.e., apoptosis) is triggered by injecting minute quantities of the sensitized allergen(s) into the tumor microenvironment.

Allergo Oncology targeted degranulation as cancer immunotherapy for solid tumors:

- Step 1: *In vivo* formation of allergen-specific IgE antibodies with hyper-allergenic skin cream compositions; then
- Step 2: Injection of minute quantities of the sensitized allergen (allergenic vaccine) directly into the tumor microenvironment, stimulating targeted degranulation and cytotoxic inhibition of cancer cells.

Allergo Oncology targeted degranulation may be an adjuvant therapy after cancer surgery. Excision of cancerous masses within the body is a common type of cancer surgery [16]. After cancer surgery, placing a solid insert that continuously and slowly releases minute quantities of sensitized allergens into the surgical space may inhibit recurrent cancer through targeted degranulation.

An adverse side effect of hyper-allergenic skin creams and targeted degranulation as cancer immunotherapy is increased allergy symptoms and possibly anaphylactic shock. Allergy medications [17] and an epinephrine auto-injector [18] can relieve allergy side effects. Controlled allergies formed by hyper-allergenic skin creams and allergenic vaccines are a relative contraindication in that the risks of complications from allergies often do not outweigh the life-threatening situation of a tumor(s) growing out of control and metastasizing. After completion of targeted degranulation, novel virus-like particle technology may be an effective treatment to relieve type I hypersensitivity [19].

3. Conclusion

Are allergies cancer-immunotherapy from nature? Recent discoveries and techniques in Allergo Oncology continue to explore natural immunity to inhibit cancer growth and proliferation. Hyper-allergenic skin creams and allergenic vaccines are a new strategic approach to cancer immunotherapy. Targeted degranulation may disrupt the immune-tolerance capability of malignant tumors and improve patient outcomes.

Compliance with ethical standards

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Disclosure of conflict of interest

Michael J. Dochniak is a Co-Founder and Cherie A. Benson is the CSO of Alleamit, Inc., Minnesota, USA.

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