Autoimmunity-based Peptides as Cancer Vaccines

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Technology description

Invention novelty: This technology uses autoantigen-derived peptides as novel immunotherapy to prevent and treat cancer.
Technical Details:
Johns Hopkins researchers have discovered that the autoimmune disease scleroderma is triggered by a cancer antigen. A subset of patients who develop scleroderma, a debilitating autoimmune disease, have an elevated risk of developing cancer. These patients harbor autoantibodies to an RNA polymerase subunit. Sequence analysis revealed genetic mutations in tumors from six of eight patients with such autoantibodies but in no tumors from eight control patients who lacked these autoantibodies. Analysis of peripheral blood lymphocytes and serum suggested that the genetic mutations induced cellular immunity and cross-reactive humoral immune responses. These results support the idea that acquired immunity helps control naturally occurring cancers. Providing patients with peptides derived from these mutant autoimmune antigens may help to activate an adaptive immune response against cancer.
Data Availability: Cellular data
Publication(s)/Associated Cases: CG Joseph et al. Science.2014 ; WO 2015/085099
Categories: Therapeutics
Keywords: Cancer vaccine; Immunotherapy; Autoimmune disease; Autoantigens; Peptide

Advantages

Today, millions of people are living with cancer or have had cancer. Despite significant advances in cancer diagnosis and treatment over the past decades, cancer remains a major healthcare challenge worldwide. Cancer vaccines are a viable option for treating many types of cancers which in the present day do not have effective treatments. This technology presents a novel immunotherapeutic approach for treating cancer by employing autoantigen-based peptides. Other advantages include:
- allows the use of a large group of human autoimmune antigens as cancer vaccines
- triggers specific cellular immune response and cross-reactive humoral immune responses
- potentially prevents and eradicates cancer at its early stage

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