Clinical hypothesis: Application of AIDS vaccines together with thyroid hormones to increase their immunogenic effect

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Abstract

To date, none of the vaccines that have been developed to prevent AIDS have proven to be sufficiently effective, despite the human immunodeficiency virus itself having been used as a vector as well as viral fragments, and genetic material from the virus itself and that the vaccines available have been administered with different adjuvants, including cytokines.

This paper presents the hypothesis that if AIDS vaccines are administered together with thyroid hormones, the cellular and humoral immune responses will increase and the patients that receive these together will present much better immunogenicity against AIDS.

Keywords: Aids vaccines; Thyroid hormones

1. Introduction

It has been more than 20 years since the start of the AIDS epidemic and there is still no effective vaccine to prevent the disease [1], there are various factors that have contributed to the failure to develop an effective vaccine, these principally being the pathogenicity of the human immunodeficiency virus (HIV) itself [2] including the hypervariability the envelope glycoproteins present [3], and the low immunogenicity immunized patients present [4].

2. Existing AIDS vaccines

A wide variety of vaccines have been developed with the purpose of generating immunity against AIDS: HIV envelope proteins, live viral vectors, and association of these with other vectors, viral deoxyribonucleic acid (DNA) vaccines, and polyvalent vaccines [5] have been used, among others. Adjuvants of various types have been used with these vaccines, including recombinant proteins [6] and cytokines have been administered in different forms together with AIDS vaccines, such as interferon alpha [7], interferon gamma [8], interleukin 2 [9], and interleukin 6 [10] to mention a few. Vaccines have also been associated with membrane receptors like CD40 [11] and with monoclonal antibodies [12].

Impressive efforts made to develop an effective vaccine to prevent infection due to HIV, why have they not been successful?

The answer: because the immune system has not been expressed during the application of the different vaccines, this can be achieved by jointly administering thyroid hormones.

3. The role of thyroid hormones in the immune response

Thyroid hormones are essential to regulate the energy metabolism of practically all body tissues [13]. The direct relationship of the immune system with the thyroid axis is bidirectional [14], thyroid hormones regulate various leukocytic actions such as activation [15] and proliferation of different cellular lineage, including T and B lymphocytes...
thyroid hormones also participate in the release of cytokines such as interferon gamma [17] and in the production of antibodies [18], and, reciprocally, some leukocytes, like the monocytes, have the capacity to secrete thyrotropin (TSH) as a regulating mechanism [19].

4. Development of a research protocol to associate AIDS vaccines with thyroid hormones

The procedure to prove the present hypothesis on the immunogenic effectiveness of AIDS vaccines by associating these with thyroid hormones is very simple, it consists of administering thyroid hormones to patients before, during, and after the application of any of the AIDS vaccines described, it can be expected that therapeutic doses of the thyroid hormones do not present significant secondary effects.

Then, what type of thyroid hormones to administer will be evaluated, either thyroxine (T4) or 3,5,3′-triiodothyronine (T3), or both, the dosage, the frequency and times for application, and the immunological response in the treated patients evaluated.

5. Discussion

The evidence that supports this paper on the role of thyroid hormones in patients to stimulate their immune system and to thus develop a better immunogenic response on the application of any of the AIDS vaccines, may be the answer we are looking for to avoid infection due to AIDS.

Thyroid hormones favor a wide variety of immunological processes, many of which have not yet been explained [18], therefore these offer a broad field for experiment by considering these hormones adjuvants for AIDS vaccines, including mucosal vaccines, which also have not yet proven to be greatly effective [20].

6. Conclusion

The idea of using thyroid hormones as adjuvants for AIDS vaccines in order to increase the immunological response in treated patients can open the way to using these hormones as immunostimulators, and to evaluate their use in the development of other viral vaccines, including the hepatitis C vaccine.

References