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Research Article

Effect of Oral Vitamin E on Atopic Dermatitis

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Abstract

Purpose: To compare the efficacy and satisfaction from vitamin E and common modalities in the treatment of AD.

Methods: This clinical trial was performed on 100 patients with AD, presenting to Dermatology Clinic of Tabriz Sina hospital (Mar 2008 until Dec 2010). The patients were allocated into two groups using the random sequence generated by RandList 11 software package. In group I, the patients received 400 IU/day Vitamin E orally, while group II patients received topical corticosteroid and oral antihistamines. All of the patients were followed up for eight months.

Results: The results were positive in the 66% of the patients in group I and 62% of the patients in group II. There was no statistical difference in response to therapy in both groups, but satisfaction was higher in patients receiving vitamin E. There was an inverse relationship between age and response to therapy in patients using vitamin E. No side effects were reported from vitamin E uses.

Conclusion: Vitamin E may have the same effect as common treatment with topical corticosteroid and oral antihistamines in improving the signs and symptoms of AD and the quality of life.

Introduction

Atopic dermatitis (AD) is frequent, idiopathic and often a difficult condition to treat [1]. Despite the increasing treatment options, the prevalence of this disease is increasing during the last decades [2- 4].

Vitamin E supplements are widely being used in clinical practice for the prevention and treatment of different medical conditions [5, 6]. It has been used for more than 50 years in experimental and clinical dermatology [7,8]. Advances on the pharmacodynamics, pharmacokinetics, therapeutic and protective effects of vitamin E on human skin, have led to stablishment of numerous new formulations for vitamin E usage in cosmetics and skin care products [7- 9].

Although the current use of vitamin E is mostly limited to cosmetics, controlled clinical studies about diseases such as AD are needed to evaluate the clinical benefits of vitamin E on human [7, 8, 10]. While a large number of case reports were published till now, there are scant controlled clinical studies providing logical and reliable data about dosage and clinical indications of vitamin E usage [7,8]. Only a few clinical studies on the effect of vitamin E have been performed on patients with AD [6].

This study was aimed to compare the efficacy and satisfaction from vitamin E and common modalities in the treatment of AD.

Methods

This clinical trial was performed on consecutive patients with AD referring to Dermatology Clinic of Tabriz Sina Educational-Medical Center, Tabriz, Iran since March of 2008 to December of 2010. Inclusion criteria were having the diagnosis of AD according to the Hanifin and Rajka Diagnosis Criteria, and having tolerance to the recommended therapy. Exclusion

criteria were having chronic diseases or other dermatologic diseases and irregular presenting for follow up visits. Of 111 enrolled patients, 11 excluded due to exclusion criteria and the study was completed with the remaining 100 patients.
All participants have signed a written consent, and the study protocol was approved by the Ethics Committee of Tabriz University of Medical Sciences (TUMS), which was in compliance with Helsinki Declaration.
The patients were divided in two groups by RandList software each containing 50 patients. In group I, the patients received oral vitamin E, 400 IU/day; and in group II patients received topical corticosteroid and oral antihistamines as a common treatment for AD. The patients in both groups were also treated by continuous topical Vaseline for skin dryness.
Patients were followed up for 8 months, visiting them monthly and having phone contacts in case of need. At any visits they examined regarding symptoms (lesions duration and extension) and signs (pruritus, sleep quality). At the end of 8 month period the patients asked to select one of options in Table 1 with attention to his/her disease status. The patients' responses were regarded as subjective effect of the therapy and underwent statistical analysis.
According to the changes in symptoms and signs within 8 months, the response to therapy was considered positive (decrease in lesions duration and extension, pruritus, and improving sleep quality), or negative (no change or intensification in symptoms and signs). Statistical analysis was performed by SPSS software package version 13.0 for windows (SPSS Inc., Chicago, USA) using Chi Square^2 and independent T-test. Quantitative data were presented as mean ± standard deviation (SD). P value less than 0.05 was considered statistically significant in all steps.

Results

Of all studied patients 52 (52%) were male and 48 (48%) were female, with the age range of 3 to 40 years. The patients had the average age of 15.5±9.2 years in group 1 (range: 3.5 to 40 years) and13.2±7.7 years in group 2 (range: 3 to 33 years) (P>0.05).
In group 1, the age of patients with no change in the disease (34%) was 21.5 years in comparison with 12.4 years of whom responsed (66%) to the therapy. Which statistically was significant (P<0.05), indicating a reverse relation between age and response to the therapy in patients treated with vitamin E. However, such correlation was not found in group 2.
In group 1, seventeen patients (34%) showed "no change" and 33 (66%) were responsive to medication. These statistics in group 2 were 19 (38%) and 31 (62%) (P=0.0677, non-significant) indicating no difference between responsiveness of patients in both groups to medications.
In the first group, nineteen of 29 male patients (65.5%) and 14 of 21 female patients (66.7%) responded to therapy (P=0.933). In group 2, fourteen of 23 male patients (60.9%) and 17 of 27 female patients (63%) responded to therapy (P=0.879). So there was not any significant relation between patients' sex and response to the therapy in both groups.
There was significant relation between "patients' subjective treatment results" throughout studied groups (Table 1). So, the patients receiving vitamin E were more satisfied than whom using Steroid with Antihistamine (P=0.039).
There was not any side effect in patients using vitamin E.

Discussion

During present randomized control trial study, the results were positive in the 66% of the patients in group I and 62% of the patients in group II. There was no statistical difference in response to therapy in both groups (P>0/05). Vitamin E has several important roles in the body, first of all it is a potent antioxidant which can improve the immune macrophage-mediated response, second, it decreases the production and/or release of prostaglandins in body and also it decreases level of immunoglobulin E (IgE) in serum in case of atopic subjects [1]. The studies indicate that vitamin E decreases the production and release of inflammatory mediators, suggesting that vitamin E might have a possible beneficial effect in inflammatory diseases [11].
Tsoureli-Nikita et al. compared the effects of placebo and Vitamin E intake in 96 individuals with AD. Fifty patients were given orally 400 IU (268 mg) of Vitamin E, once a day for period of 8 months, and 46 patients took placebo for the same period. The correlation between Vitamin E intake, IgE levels, and the clinical manifestations of atopy indicated that Vitamin E can be an excellent therapeutic tool for AD [1].

Table 1. The subjective results of treatment in both studied groups

Results	Group1 (Vitamin E)	Group 2 (Steroid+ Antihistamine)
Inverse result	3 (6%)	2 (4%)
No change	14 (28%)	17 (34%)
Little Improvement	7 (14%)	18 (36%)
Fairly improved	13 (26%)	8 (16%)
Completely improved	13 (26%)	5 (10%)

Inverse result, worsen lesions; Good improvement, controlled itching with little licnification remained in the limbs; Complete improvement, complete recovery without any itching and skin lesions

We compared the efficacy and satisfaction of having vitamin E and common modalities for treatment of AD. The results showed that there is more satisfaction in patients receiving Vitamin E than whom using Steroid with Antihistamine.
Nemelka et al. studied a new topical product containing Vitamin E. The product has been extensively tested for its effectiveness and skin tolerability on a selected population of 60 infants and children with age ranging from 2 months to 14 years, who are suffering mainly from AD and irritant dermatitis. The topical use of the product result in a significant improvement in inflammatory skin conditions, with evident and fast reduction of inflammation and eczema the investigated pathologies. It was particularly suitable in the treatment of pediatric dermatitis with symptoms like eczema, itching, desquamation and xerosis [9].
In a double-blind, placebo-controlled, randomized study of 112 patients with hay fever, patients divided into two groups received either vitamin E (800 mg/d) or placebo in addition to their regular antiallergic treatment during the pollen season. The study showed that vitamin E supplementation is a valuable addition for treatment of seasonal allergic rhinitis [6]. Oh et al. showed that AD is associated negatively with intakes of antioxidant-related nutrients. A similar association was observed for dietary vitamin E [12]. It was suggested that higher antioxidant nutritional status reduces the risk of AD. However, further clinical and basic science studies are needed to determine the real value of new treatments including vitamin E [6,13,14]. Shahar et al. [6] suggest that vitamin E supplementation may be a valuable addition to the treatment of patients with seasonal allergic rhinitis.
Atopic diseases, for example AD, are characterized by increased oxidative stress [2,15,16]. Low vitamin E intake in diet has also been associated with current symptoms of atopic diseases [2,17,18]. Epidemiologic studies have demonstrated beneficial effects of vitamin E which is naturally found in patients' diet, on atopy in children and adults [19- 21]. Vitamin E may have immunomodulatory properties beyond its antioxidant function [22]. The positive response to vitamin E suggests that protection from oxidative injury may have a role in the resolution

of ulcerative dermatitis lesions and offers researchers a new treatment modality with better compliance [23].

Martindale et al. suggested that maternal use of antioxidant during pregnancy may decrease the risk of suffering from wheeze and eczema over early childhood years. However, they suggested continuing the follow up of the cohort in order to determine whether mother's diet in pregnancy has an association with atopic disease later in child's life or not [21].

In children with AD, the homeostasis of vitamin E is changed. Decreased erythrocyte levels of the vitamin are probably due to the limited tissue reserve. The role of vitamin E in the pathogenesis and prevention of AD needs further investigations [24]. Clinical practice in dermatology indicates that lipophilic antioxidant vitamin E is beneficial in AD and generally among skin diseases in which an inflammatory process is activated [24,25].

Vitamins are a natural constituent of human skin and are an important part of the antioxidants system which protects the skin from oxidative stress. Use of natural antioxidants such as vitamins to improve restoring dermal antioxidant activity has gained interest. Vitamin E, has been shown to have potent antioxidant and anti-inflammatory properties [26].

Consumption of vitamin E is increasing rapidly in dermatologic treatment. Several studies investigated the effects of vitamin E against oxidative stress [5]. Oral ingestion of ascorbic acid (2000 mg/d) and vitamin E (1000 IU/d) reduced the sunburn reaction in human cases [5, 27].

Vitamin E ointment suppresses contact dermatitis by stabilizing keratinocytes [28]. Studies suggest that topical and oral vitamin E has antitumorigenic, photoprotective, and skin barrier stabilizing properties [7, 8]. Evidences from basic science studies suggest that vitamin E may reduce immune allergic responses [6].

In past decades there was scant proof of vitamin E's effectiveness in treating certain dermatologic conditions including AD [29]. Balabolkin et al. found slight efficacy of vitamin E detected in AD of children [30]. In our study, there was no statistical difference in response to therapy in both groups, but satisfaction was very higher in patients receiving vitamin E than patients treated by common modalities.

Frequent use of vitamin-E derivatives in skin care products deserves further investigation about tolerability and suitability of vitamin E in skin care preparations. Given its antioxidant and photoprotective properties, vitamin E should remain an ingredient in skin care products [31].

In conclusion, vitamin E may have the same effect as common treatment with topical corticosteroid and oral antihistamines in improving signs and symptoms of AD and quality of life. By considering the lack of side effects of therapeutic dose of vitamin E, it can be recommend a suitable therapy for AD.

Conflict of interests: The authors declare no conflict of interest.

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