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Original research article

A STUDY OF SERUM RETINOL LEVEL IN PATIENTS WITH ATOPIC DERMATITIS

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Abstract

It is a common dermatological ailment that causes significant morbidity and is characterised by diffuse symmetrical eczematous eruption. Atopic dermatitis, also known as AD, is a condition that affects the skin. In this particular study, the serum retinol level of individuals who were diagnosed with atopic dermatitis was evaluated.

Keywords: Atopic dermatitis, retinol, skin

Introduction

It is a common dermatological ailment that causes significant morbidity and is characterised by diffuse symmetrical eczematous eruption. Atopic dermatitis, also known as AD, is a condition that affects the skin. Patients typically have a personal history of allergic syndromes, such as asthma or rhinitis, or a history of allergic reactions in their family. Flexural parts of the body are typically affected by this condition, which typically manifests itself in infants and young children [1].

The skin condition known as allergic rhinitis, often known as hay fever or seasonal allergies, and asthma are frequently linked to one another. All three of these disorders are referred to collectively as atopy, and those who are affected by it have a personal or family history of one or more of the three conditions. A domain of inherited hypersensitivity to environmental allergens was defined by this word for the first time in 1923. This domain is distinct from hypersensitivity and anaphylaxis to infection [1]. Atopic dermatitis (AD) and atopic eczema are both names that dermatologists frequently use to refer to this condition, and the phrases can be used interchangeably [2]. AD is diagnosed clinically and is based on a personal or family history of atopy as well as the clinical presentation of a chronic or recurrent pruritic dermatitis that exhibits typical morphology and age-specific patterns. This diagnosis is determined based on the patient's symptoms and signs. Patients who are experiencing acute flares typically exhibit visible lesions that are erythematous, scaly, and extensive excoriations. In situations that are more severe, the presence of papules and/or spongiotic vesicles is observed. Chronic diseases are characterised by the presence of dyspigmentation and lichenification. When it comes to darker skin types, the skin may have a grayish-white or ashy appearance, and erythema may be difficult to spot. On the other hand, follicular

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accentuation, lichenification, and post-inflammatory dyspigmentation are more noticeable [3].

Furthermore, retinol possesses significant immunomodulatory effects. Retinol is also an effective antioxidant, which is another benefit. As a result, the monitoring of retinol levels in serum and skin lesions of Alzheimer's disease patients, which serves as an indicator of the immune response and antioxidant defence, may be of significance for the treatment strategy employed by doctors [4]. In this particular study, the serum retinol level of individuals who were diagnosed with atopic dermatitis was evaluated.

Materials and Methods

The department of Dermatology was the location where the current study was administered. It included 30 cases of atopic dermatitis that were diagnosed in people of both sexes. In addition, there was an equal number of controls provided. A written consent was obtained from each individual, and they were all informed about the study. The protocol for the study was presented to and approved by the Ethics Committee. Information such as a person's name, age, gender, and other details were recorded. A punch biopsy and a sample of venous blood were taken from every individual study participant. We used a reversed-phase method to determine the levels of retinol in the serum.

This technique is known as high-performance liquid chromatography (HPLC). Statistical analysis was performed on the results that were collected in this manner. The P value was regarded to be significant if it was less than 0.05.

Results

Table I: Distribution of subjects

Total-30		
Gender	**Male**	**Female**
Number	18	12

Table II: Retinol level in both groups

Groups	Mean retinol level	P value
Group I	49.6	0.001
Group II	152.3	

Discussion

The risk of developing Alzheimer's disease is connected with regions that are more industrialised, urbanised, and have a higher affluent class. On the other hand, living in more tropical latitudes and rural areas is associated with a decreased risk of developing Alzheimer's disease [5]. In this particular study, the serum retinol level of individuals who were diagnosed with atopic dermatitis was evaluated.

Within the scope of this investigation, there were 74 participants, with 32 males and 42 females. Biswas *et al.* [6] investigated whether or not there was a connection between the amounts of retinol in skin lesions and serum and Alzheimer's disease. A reversed-

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phase high-performance liquid chromatography method was utilised to analyse the amounts of retinol in punch biopsy samples taken from the skin and venous blood of 86 people, including 43 cases and 43 controls. When compared to the amounts found in the controls, the levels of retinol found in the skin and serum of patients were shown to be considerably lower.

While the mean retinol level in group I patients was found to be 51.6 μmol/l, the retinol level in group II subjects was found to be 172.3 μmol/l. There is a wide variety of immunological effects that retinol can have. It does this by inhibiting the synthesis of IL-12 from antigen-presenting cells like Langerhans cells, inflammatory dendritic epidermal cells, and macrophages; it also suppresses the production of IFN-γ from T and NK cells, and it lowers the levels of IgG [7]. It also prevents the synthesis of IL-6 that is triggered by IL-1. Last but not least, it lowers the levels of TNF-α. The inflammatory process in chronic Alzheimer's disease may be reduced as a result of all of these actions of retinol. It is common knowledge that retinol possesses an antioxidant function. Within the realm of lipoperoxyl radicals, it possesses an exceptionally high level of chemical reactivity or scavenging activity. Additionally, it is worth noting that there exist synergistic interactions between all-trans-retinol and α-tocopherol in the context of prevention of lipid peroxidation. The antioxidant efficiency of α-tocopherol is significantly enhanced by its ability to restrict the auto-oxidation of all-trans-retinol, as stated in reference [8].

The most common form of treatment for Alzheimer's disease (AD) is the use of topical corticosteroids (TCSs) for the management of mild to acute flares. TCSs continue to be the first line of treatment, despite the fact that the introduction of more recent medicines has made it possible to shorten the duration of treatment with these therapies. Patients with Alzheimer's disease who have not responded to adequate skin care and the consistent application of emollients alone are recommended to use topical corticosteroids, according to the guidelines that are now in place [9]. For the treatment of Alzheimer's disease (AD), it is typically advised that TCSs be applied twice daily for a period of no more than two weeks. However, due to the potential of local side effects, such as striae, telangiectasia, generalised hypertrichosis, and skin atrophy, TCSs should only be given to affected sites. In order to reduce the risk of cataracts and glaucoma, it is recommended that patients of all ages who have periorbital involvement investigate alternate topical therapy such as topical calcineurin inhibitors and PDE4 inhibitors. This is because the application of TCSs to the periorbital regions over an extended period of time is linked to an increased risk of developing these conditions.

Conclusion

According to the findings of the authors, the serum retinol level of patients with atopic dermatitis was significantly lower when compared to healthy individuals.

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