ORIGINAL RESEARCH PAPER

Dermatology

DESCRIPTIVE STUDY OF THE ROLE OF DIET AND SUPPLEMENTS IN VITILIGO MANAGEMENT

KEY WORDS: Dietary supplements , vitiligo, botanicals .

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ABSTRACT

BACKGROUND : Vitiligo is an autoimmune disorder that involves an interplay between oxidative stress and the immune system.

AIMS AND OBJECTIVE : To study the role of vitamins , minerals and botanicals to be used as an adjunct to the conventional medical treatments of vitiligo.

MATERIAL AND METHODS : forty patients were given dietary supplements of vitamin B12 and forty patients were given vitamin C then the result was compared with forty controls in each group.

RESULT : After 12 weeks , the cases and controls were compared in both groups and cases in both groups with dietary supplements in adjunct to medical treatment improved significantly as compared to control [p< 0.001].

CONCLUSION : Dietary supplementation significantly improves vitiligo.

INTRODUCTION

Vitiligo is an acquired disorder of pigmentation characterized by well defined depigmented patches of skin. Biopsy of lesional skin classically reveal an absence of epidermal melanocytes.[1-3]

Multiple theories have been proffered for melanocyte destruction, including genetic , autoimmune , biochemical , viral and melanocyte detachment mechanisms. Current research data suggest that autoimmune aberrations and oxidative stress are the key pathways mediating the destruction of melanocytes in vitiligo.[4-5] Oxidative stress may initiate the cycle of destruction of melanocytes.[4]

An altered intracellular redox status and depletion of enzymatic and non-enzymatic antioxidants has been documented in the epidermis of patients with vitiligo[6-8]. Hence the generation of reactive oxygen species [ROS] may begin the cycle of destruction of melanocytes in genetically susceptible individuals by activation of the innate and adaptive immune response.[1,2,6]

A variety of humoral and cell-mediated immune defects are reported in patients with vitiligo[2,5,9,10]. However , multiple studies now document the role of activated cytotoxic CD8+T lymphocytes and the interferon gamma – induced chemokines CXCL10 as key immune mediators of melanocyte destruction.[11,12]

The interplay between the oxidative stress and the immune system may represent the critical pathways in vitiligo. Hence it is a novel and rational strategy to address the role of diet, lifestyle modifications, and oral supplementation with vitamins, minerals and botanicals as an adjunctive approaches in the therapeutically challenging vitiligo arena.

Although food per se may not play an important role in vitiligo management, there are general dietary recommendations based on the antioxidant, vitamin, and micronutrients composition of foods. For example, vegetable oils that are high in omega-6 fatty acids may increase the production of ROS and cytokines that may play a role in vitiligo.[13,14] Celiac disease is frequently comorbid with myriad other autoimmune diseases, including vitiligo. In a case controlled study of 64 patients with vitiligo and 64 controls, immunoglobulin IgA anti-endomycial antibody and IgA antiglutaminase antibody which are diagonostic markers for CD, were measured.[15] Two female subjects with vitiligo were found to be seropositive for these antibodies verses none of the controls.

In one study, two case reports in patients of vitiligo who had not responded to topical agents and phototherapy showed some degree of repigmentation with a gluten free diet.[15]

A recent study sought to examine the relationship between exposure to a number of thyroid disruptors and toxins and the presence of thyroid hormone antibodies to T3 and T4 in 70 white patients with vitiligo. It was found that 86.7% of the subjects had thyroid hormone antibodies and most had both T3 and T4 antibodies. A significant association was noted between the intake of foods containing nitrates{green leafy vegetables}, thio-cyanate { broccoli, cabbage, and other brassicas and soy isoflavones and the presence of T3 antibodies.

MATERIAL AND METHODS

It is a descriptive study which involved 40 patients with vitiligo who were supplemented 1mg of vitamin B12 {group A} along with the adjunctive oral and topical therapy. Patients were also encouraged to expose their skin to sunlight or UVB radiation . Group 2 comprised of 40 patients who were given vitamin C 1000mg per day as an adjunctive therapy along with oral and topical therapy. Group C comprised of controls who were not given any adjunctive therapy along with oral and topical therapy for vitiligo.

It was a 12 week , randomized ,single blind study conducted on vitiligo patients. The patients were randomized into three groups {Group A= 40, Group B= 40 and Group C= 40}. Randomization was performed through blocked randomization by the use of the table of random numbers. Eligible patients were those having unstable vitiligo. The patients had received vitiligo treatments but at the time of study they were not under any medications or treatment for last 2 years or consulted us for the first time. Both male patients and female patients were included in the study. Exclusion criteria were pregnancy, chronic skin disease, lip- tip vitiligo and current vitiligo treatments at the time of study. For this study, t-test and paired t test were performed to compare quantitative variables { age, duration of the disease } between and within groups respectively. Fischer's exact test was used to compare sex of the patients.

This study is an institutional study performed from Oct 2019 to

Dec 2019 at Nalanda Medical College and Hospital, Patna.

RESULTS

Table 1: Age distribution of cases and controls

Age distribution	Group A cases	Group B cases	Group C controls
0-20 yrs	12 <30%>	15 <37.5%>	16 <40%>
21-40 yrs	18 <45%>	16 <40%>	16 <40%>
41-60 yrs	7 <17.5%>	8 <20%>	8 <20%>
>60yrs	3 <7.5%>	1 <2.5%>	1 <2.5%>

Most number of vitiligo cases both Group A and Group B as well as controls Group C were in age group 21- 40 yrs. Least number of vitiligo cases belonged to group >60yrs.

After substituting vitamin B12 ,1mg in Group A and adding vitamin C 1000mg in Group B all the cases were followed up after 12 weeks and compared with the controls. The repigmentation in both the groups was divided as no pigmentation if there is no reduction in the size of lesion. Slight pigmentation if 1-20% of lesion has pigmented after 3 months, mild pigmentation if 21-40% of lesions have pigmented, moderate pigmentation if 41-60% of lesions has pigmented , significantly good if 61-80% of lesions have pigmented and total if > 80% of lesions have pigmented with therapy.

Table 2: Classifying cases and control on the basis of repigmentation

Repigmentation	Group A <cases>	Group B <cases>	GroupC <controls>
No pigmentation	3<7.5%>	2<5%>	4<10%>
Slight pigmentation	8<20%>	10<25%>	18<45%>
Mild pigmentation	17<43.5%>	20<50%>	10<25%>
Moderate pigmentation	8<20%>	7<17.5%>	5<12.5%>
Sig. pigmentation	3<7.5%>	1<2.5%>	3<7.5%>
Total pigmentation	1<2.5%>	0<0%>	0<0%>

63.5% of patients of Group A , who were given vitamin B12 had mild to moderate pigmentation and 67.5% of patients of Group B, who were given vitamin C had mild to moderate pigmentation as compared to 37.5% in Group C .

DISCUSSION

Many diets do not provide vitamins and minerals in sufficient quantities or types to counter oxidative stress or modulate the immune system, there is increasing interest in supplementation .

VITAMIN B12

It is a water soluble vitamin that exerts hematological and neurological effects. It is 1 of 8 B vitamins, Folic acid is the synthetic form of vitamin B9.

Humans can't synthesize folates hence it must be obtained from diet. Folates are needed for DNA repair, synthesis, and methylation of DNA. They are crucial for cell growth, division and brain function. Montes and colleagues reported diminished blood levels of vitamin B12, folic acid and ascorbic acid in a group of 15 patients with vitiligo. Prolonged supplementation with of B12 was associated with repigmentation in vitiliginous patches. The rationale behind this is association of pernicious anaemia and vitiligo. Several groups found no association of supplementation of vitamin B12 and vitiligo. In our study we found a positive correlation of supplementation of vitamin B12 and vitiligo repigmentation.

VITAMIN C

Vitramin C is a water soluble vitamin found abundantly in citrus fruits and a variety of leafy vegetables. Multiple studies have documented the beneficial health effects of vitamin C, including its antioxidant and immunomodulatory properties.
It has been suggested that vitamin C supplementation is contraindicated in vitiligo, because of its skin lightening activity. However, Yoon and colleagues[14] suggested that its antioxidant benefits override this risk. The efficacy and safety of ascorbic acid was assessed in 188 Indian patients with vitiligo. The patients were stratified to 3 groups. Given societal myths regarding ascorbic acid use in vitiligo , 75 avoided vitamin C products. The second group of 113 patients consumed vitamin C daily in their diet. A third group of 12 patients ingested vitamin C 1000 mg daily for 6 months. Statistical analysis of 3 groups showed no difference in the progression of the disease.

Other botanical experimented to be used in vitiligo are:
Polypodium leucotomos is a tropical fern that has been shown to protect against UV radiation-induced damage.[15] Other mechanism of action of PL include its immunomodulatory effects and inhibition of proinflammatory cytokines. In a study of 50 patients PL showed promising result.

Piprine, the major alkaloid of black pepper , has been shown to stimulate the replication of melanocytes and induce the formation of melanocytic dendrites in vitro. Local application of Piprine has also been utilized for repigmentation in some studies. Green tea epigaollocalechin-3-galate has anti-oxidant, anti-inflammatory and anticancer properties. EGCG modulates multiple T cell mediated immune responses and hence can be used in repigmentation of vitiligo patients.

CONCLUSION

There is enormous interest among patients regarding complementary and alternative medical approaches for treatment of vitiligo.

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