

Effectiveness of the *Capparis spinosa* Treatment in Vitiligo

Nazan EMİROĞLU, Fatma Pelin CENGİZ, Anıl GÜLSEL BAHALI, Dilek BIYIK ÖZKAYA, Özlem SU, Nahide ONSUN
Department of Dermatology, Bezmalem Vakif University School of Medicine, İstanbul, Turkey

ABSTRACT

Objective: We aim to compare the efficacy of topical steroids and *Capparis spinosa* extract in the treatment of vitiligo.

Methods: Patients were retrospectively identified from those treated by the Department of Dermatology. 60 vitiligo patients were included in the study. 30 of them were given topical steroids, and 30 of them were treated with *Capparis spinosa* extract. VASI (Vitiligo Area Scoring Index) were calculated statistically before treatment and during the sixth month of treatment.

Results: Although the VASI value of patients who treated with topical corticosteroids decreased statistically, no statistically significant changes were observed in patients who treated with *Capparis spinosa* extract. After treatment, VASI values were significantly lower in patients with treated topical corticosteroids than treated with *Capparis spinosa* extract ($p < 0.05$).

Conclusion: In this study, topical corticosteroids were more effective than *Capparis spinosa* in the treatment of vitiligo. Although there was not statistically difference of VASI values in patients treated with *Capparis spinosa*, repigmentation was observed after treatment. Therefore *Capparis spinosa* is not enough alone but maybe it can be used in combination therapy of vitiligo.

Keywords: Vitiligo, treatment, *Capparis spinosa*

Introduction

Vitiligo is an acquired disease with an unknown etiology, in which losses appear in the functional melanocytes of the skin, which is clinically depigmented and progresses with macules and patches. Although it has many treatment options with an incidence of approximately 0.5%–2%, its efficacy is very limited, and response to treatment varies from patient to patient (1). Treatment failures have led to new treatment needs. Experimental treatment methods are important in this point.

Topical and systemic therapies, phototherapy, depigmenting agents, surgical procedures, or combinations of these treatments are used in patients with vitiligo (2, 3).

The aim of the present study was to compare the efficacy of *Capparis spinosa* extract with the efficacy of topical steroid therapy in vitiligo in which some patients are still resistant to treatment despite many treatment options, requiring new treatment options.

Methods

Treatment of patients with vitiligo who were examined between January 2014 and July 2015 in the dermatology polyclinic of our hospital was retrospectively screened. The ethics committee approved the study. The study was conducted in accordance with the Declaration of Helsinki (1964), which was corrected in 1996 at Somerset West.

Patients were divided into two groups. Patients with localized vitiligo who were treated with topical *C. spinosa* were classified as the patient group, and patients with localized vitiligo who were treated with topical corticosteroids were classified as the control group. Sixty adult patients clinically diagnosed with vitiligo were included in the study. Pregnant and

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Address for Correspondence: Nazan EMİROĞLU, Department of Dermatology, Bezmalem Vakif University School of Medicine, İstanbul, Turkey E-mail: dr.nazanyilmaz@hotmail.com

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breastfeeding patients and patients using systemic immunosuppressives, any topical drug, or other drugs for vitiligo were excluded from the study. Vitiligo Area Scoring Index (VASI) was calculated using photographs used in the clinical follow-ups of the patients. Written informed consent was obtained from the patients.

VASI is recommended to assess the severity of vitiligo. The extent of lesion and the degree of depigmentation are the parameters assessed using VASI. The extent of the affected area is calculated by assuming that the palm (palmar area+volar face of the fingers) corresponds to 1% body surface area. The degree of depigmentation is expressed as 0%, 25%, 50%, 75%, and 100% according to the pigment ratio in the lesion. Full depigmentation is considered as 100%. VASI is calculated by the formula: lesion extent×depigmentation degree. It is a scoring used to assess the response to treatment. In the present study, VASI of the patients who were treated with topical corticosteroids and topical *C. spinosa* was calculated before treatment and 6 months of treatment and was compared statistically. Statistical analysis was assessed using the χ^2 test. A p value <0.05 was considered significant.

Results

Sixty patients with vitiligo were included in the study. Topical *C. spinosa* was initiated in 30 patients, and topical corticosteroid was initiated in 30 patients. However, 9 patients who received topical *C. spinosa* treatment and 10 patients who received topical corticosteroid treatment were excluded from the study because they did not come for the controls or used the medication irregularly. Of the patients who received topical *C. spinosa* treatment, 12 (57.1%) were females, and 9 (42.9%) were males. Of the patients who were included in the study and received topical corticosteroid treatment, 8 (40%) were females, and 12 (60%) were males. The mean ages of the patient group and the control group were 28.75±1.29 and 26.33±2.13 years, respectively. There was no statistical difference in terms of age and gender between the patient and control groups.

Only patients with focal vitiligo were included in the study. Response to treatment was assessed through clinical observation. VASI of the patients was calculated.

Although repigmentation was observed after treatment in comparison to before in 7 out of 21 patients who were treated with topical *C. spinosa* (Figure 1a-d), there was no statistically significant change in their VASI (p>0.05) (Table 1).

Although repigmentation was observed after treatment in comparison to before in 14 out of 20 patients who received topical corticosteroid, there was a statistically significant decrease in their VASI (p<0.05) (Table 2, Figure 2a, b).

The VASI scores of the two groups were consistent before treatment. When compared after treatment, the VASI values of the patients who received topical corticosteroid treatment

were significantly lower than those who received topical *C. spinosa* treatment (p<0.05) (Table 1).

Discussion

Vitiligo is a common disease in the community. It progresses with acquired depigmentation as a result of the dysfunction of the epidermal melanocytes. Its etiology is unknown. It is acquired, idiopathic, clinically depigmented, and characterized by macules. The incidence of vitiligo is approximately 0.5%–2% and usually begins in childhood or in young adult ages (1). Despite the knowledge that genetic, physical, and emotional factors play a role in its etiology, its pathological mechanism is still unknown. Melanocyte loss is observed histopathologically, and three different hypotheses have been proposed as neural, autoimmune, and autocytotoxic in order to explain its pathogenesis (2, 3). The most widely accepted hypothesis is autoimmune melanocyte attack and destruction through the cellular immune system. Oxidative stress is based on the autotoxic hypothesis, and it is known that it plays a role in cell death and pathological event (2). In the neural hypothesis, it is suggested that neuropeptides can play a role in the pathogenesis of vitiligo (3).

Treatment of vitiligo varies according to the age of the patient, spread and localization of the lesions, and response to previous treatments. The aim of the treatment is to stop the progression of the disease, provide repigmentation, and slow down the depigmentation process. Repigmentation can be seen spontaneously in 15%–25% of cases (4). Currently, there is no single method to fully treat vitiligo lesions. Of the patients, 15%–30% do not respond to treatment. A hundred percent repigmentation cannot be achieved in vitiligo treatment. On average, ≥75% repigmentation is considered as a perfect response. This response is achieved in 60% of the patients (5).

Conventional treatment methods include phototherapy, photochemotherapy, and corticosteroids. New treatment methods are immunomodulators (tacrolimus and pimecrolimus), cyclosporin, vitamin D3 analogs, excimer laser, and ultraviolet B microtherapy. Despite the availability of many treatment modalities, there is no useful method for all patients, and the response to treatment is highly variable. All treatment methods have disadvantages and advantages. For this reason, the treatment choice can vary from patient to patient. In a group of patients, new treatment options are sought because no response to treatment could be achieved (3, 4).

Table 1. VASI values before and after treatment

Treatment	<i>Capparis spinosa</i>	Topical corticosteroid	p
Before treatment	3.22±2.98	3.46±3.01	>0.05
6 months of treatment	3.11±2.86	1.85±1.88	<0.05
VASI: Vitiligo Area Scoring Index. Mean±SD			

Experimental treatment methods gain importance at this point. Many treatment methods, such as oral or topical phenylalanine administration, benefiting from the antioxidant effects of alpha-lipoic acid preparations, oral administration of vitamin B12, folic acid, other vitamins and trace elements, use of oral levamisole, use of topical prostaglandin analog, topical application of placental extract (melagenina), topical application of 5-FU, and kheililn+ultraviolet A application, are included in experimental treatments (6-10).



Figure 1. a. Right foot before *Capparis spinosa* treatment



Figure 1. c. Right foot after *Capparis spinosa* treatment



Figure 1. b. Left foot before *Capparis spinosa* treatment



Figure 1. d. Left foot after *Capparis spinosa* treatment



Figure 2. a. Neck before topical corticosteroid treatment



Figure 2. b. Neck after topical corticosteroid treatment

C. spinosa is a plant that grows in Western and Central Asia and in the Mediterranean Basin. It has a strong resistance to harsh environmental conditions and was used as a sweetener in foods and as a diuretic treatment in hypertension in ancient times. It grows in the wilderness in Tunisia from spring until the end of summer (11). Biological studies have shown that it has significant antimicrobial, antioxidant, anti-inflammatory, and antiviral properties. It has been used as a traditional medicine to treat various diseases (12). The presence of alkaloids, lipids, polyphenols, flavonoids, and glucosinolates has been found in studies conducted on the chemical composition of *C. spinosa*. It has also been reported that *C. spinosa* is rich in kaempferol, rutin, and flavonoids, such as quercetin and quercetin derivatives (11). It has been shown in studies related to quercetin that it can be a natural and potent inducer of melanogenesis by increasing tyrosinase activity and melanogenesis in human melanocytes (13). In addition, it has cell protective effects against free radicals and active oxygen species. The fact that the increase in free radicals and lipid peroxidation products may also be responsible for depigmentation in vitiligo is due to the etiopathogenetic mechanisms that are suggested. Jimenez-Cervantes et al. reported that H_2O_2 inhibits melanogenesis in melanoma cells. Quercetin has also been shown to have suppressive effects on cytotoxicity due to H_2O_2 (13). Based on these, a topical cream form has been produced in view of the fact that *C. spinosa* extract may be a treatment alternative in vitiligo. In our study, although repigmentation was observed after treatment in 30% of the patients who were

treated with topical *C. spinosa* in comparison to before (Figure 1a-d), there was no statistically significant change in their VASIs ($p>0.05$) (Table 1).

The use of topical corticosteroids is a treatment method in localized lesions in vitiligo. Its efficacy depends on immunomodulator effects. Although the first choice is accepted in localized vitiligo because of its advantages, such as low cost and ease of use, side effects, such as atrophy, telangiectasia, and striae, limit its use in the long term. Therefore, if there is no response to treatment for 2–3 months in patients receiving topical corticosteroids, treatment should be stopped (14–15). It was shown in some studies that using potent and superpotent steroids provides 75% repigmentation in approximately 60% of the patients (16, 17). In our study, although repigmentation was observed in 70% of the patients who received topical corticosteroids after treatment in comparison to before, there was a statistically significant decrease in their VASI ($p<0.05$) (Table 1, Figure 2a, b).

When patients using topical *C. spinosa* were compared with patients using topical corticosteroids, topical corticosteroids were more successful in terms of response to treatment. However, repigmentation was also seen in patients using *C. spinosa*.

In conclusion, topical corticosteroids were more effective when we compared the efficacy of *C. spinosa* extract, a new option in vitiligo treatment, with topical corticosteroids. However, the fact that repigmentation has been also observed

in patients using *C. spinosa* suggests that even if not alone, it is an herbal medicine that can be added to the existing treatments patients receive.

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Informed Consent: Written informed consent was obtained from all the patients who participated in this study.

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