EVALUATION OF THE EFFECTIVENESS OF EXIMER LASER IN PATIENTS WITH CHRONIC DISEASES DIAGNOSED WITH ALOPECIA

Dilshod A. Yusupov – Ph.D. researcher
Bukhara State Medical Institute (Bukhara, Uzbekistan)
yusupov.dilshod@bsmi.uz

Abstract. *Analysed to achieve optimal combination therapy to accelerate hair growth in alopecia areata patient by using selective antioxidants Actovegin, ATP and Excimer light phototherapy (308nm). Patients treatment method by using a combination of drugs: Actovegin, which was administered intramuscularly at 2 ml every other day (15 injections) and alternated with intramuscular injections of ATP 1% - 1 ml every other day, as well as 15 injections. The research consist of 5 to 65 years old 36 patients with alopecia areata and 30 healthy individuals were enrolled. General clinico-laboratory results collected from all participants which CBC, biochemical analysis, specific skin test for checking hair growth spedd. ELISA was used for detection of IgG antibodies against hair follicle, calcitonin hormone level and trichoscopy method in scalp hair of participants to specify autoimmune disorders. Effectiveness of methods were highly detected from the result of 31% of the patients and 11% of the controls. This article presents the results of assessing the effectiveness of the eximer laser in 38 patients diagnosed with alopecia who were treated at the regional branch of the Dermatovenerology of the Bukhara region. The purpose of the study is to identify changes in patients diagnosed with alopecia using comprehensive examination methods and, accordingly, to further optimize comprehensive treatment methods.*

Keywords: *alopecia areata, Excimer light phototherapy (308nm), actovegin, autoimmune thyroiditis, calcitonin, chronic cholecystopancreatitis.*

Introduction. Alopecia areata is a chronic, immune-mediated, non-scarring hair loss disorder characterized by patchy hair loss on the scalp or body. Global prevalence diseases affects about 0.1–0.2% of the general population at any given time; lifetime risk ~1–2% [3]. In life time ascosiation of alopecia areata can occur at any age, but most cases start before age 40; peak incidence between 10–30 years. About 20% occur in childhood [1,6]. Affects males and females equally, though some studies show a slight female predominance due to healthcare-seeking behavior, occurs in all ethnic groups; prevalence may be slightly higher in individuals of Asian and Caucasian descent according to some studies. Positive family history in ~10–20% of cases, suggesting a genetic predisposition (HLA associations such as HLA-DQB1, HLA-DRB1) [5]. Commonly linked with autoimmune diseases (thyroid disease, vitiligo, type 1 diabetes, atopy, lupus). Can relapse in anytime high-up to 85% of patients experience relapse after remission. Most have limited patchy AA; about 7–10% progress to alopecia totalis (complete scalp loss) or alopecia universalis (complete body hair loss) [2,3]. Significant increased rates of anxiety, depression, and low self-esteem disturb in patients life [3,7,8]. The disease causes hair loss on the scalp, face, and sometimes other body areas, like under the arms or on the legs. People with alopecia areata most often lose hair in circular, coin-sized patches on the scalp, but in more severe cases, they may lose all of their hair. About 2% of people across the world will experience alopecia areata at some point in their lifetime. Nearly 7 million people in the U.S. and 160 million worldwide have alopecia areata or have had, or will have it. About 700,000 people in the U.S. currently have some form of alopecia areata. Alopecia areata is a polygenic disease, meaning it is related to multiple genetic factors. But not everyone with the genes develops the disease. For example, identical twins share all the same genes, but if one twin has alopecia areata, there is only a 55% chance that the other twin will have it. The disease is a complex one. Scientists know it is an autoimmune disease, but they aren’t sure why the immune system attacks the healthy hair

follicles of people with the gene variations in the first place. About 20% of people with alopecia areata have at least one family member who also has the disease.

Objective of the research. The aim of this study was to evaluate new approaches for correcting the activity of alopecia areata. Assessment of the significance of excimer light phototherapy (308 nm), combined therapy including ATP and actovegin in alopecia to accelerate hair growth in alopecia areata patient by using selective antioxidants Actovegin, ATP and Excimer light phototherapy (308nm).

Research materials and methods. The study included 38 patients: 32 with chronic idiopathic DTA with a disease duration of 8 months to 4 years, 6 without any trichological pathology (*control group*). The age of patients with telogenic alopecia ranged from 21 to 42 years and averaged 31 ± 4.2 years. The average age of the control group participants was 28±6.7 years. Before initiating treatment, examination of patients with chronic idiopathic DTA was carried out: assessment of general clinical and laboratory tests, thyroid hormones (thyroid-stimulating hormone, T3-triiodothyronine, T4-thyroxine), ultrasound of organs (brush cavity and thyroid gland); biochemical and clinical blood tests; identification of possible pathologies of the gastrointestinal tract and hepatobiliary system, consultation with an endocrinologist, gastroenterologist, and psychotherapist (if necessary). Patients of both groups received treatment using a combination of drugs: Actovegin, which was administered intramuscularly at 2 ml every other day (15 injections) and alternated with intramuscular injections of ATP 1% - 1 ml every other day, as well as 15 injections. Simultaneously, for a month, patients underwent Excimer light phototherapy (308nm) procedures daily for 10 days. All calculations were performed in the Microsoft Excel program. Differences were considered statistically significant at $p \leq 0.05$.

Results and discussion. When studying the clinical signs of alopecia in patients of the main group, all the studied indicators were within the reference values corresponding to gender and age. The content of thyroid hormones also corresponded to normal values. Ultrasound revealed no signs of thyroid pathology. No deviations were also noted in biochemical indicators such as total protein, ALT, AST, alkaline phosphatase, total bilirubin, and glucose. In the clinical blood analysis, there were no signs of anemia, the number of erythrocytes and the level of hemoglobin corresponded to the age and sex norm. Upon completion of the 6-month therapy course in patients with DTA, the number of telogen hairs decreased statistically significantly (to 15.5 ± 1.2%) compared to the initial values. Their hair density indicators increased statistically significantly: in the occipital region up to 136.6±18.5 per cm^2, in the frontal-parietal region - up to 151.3±9.8 per cm^2, but did not reach the values of the control group. Hair diameter in patients with chronic idiopathic DTA after treatment also increased statistically significantly: up to 59.2 ± 4.2 μm in the occipital region and up to 60.5 ± 3.1 μm in the frontal-parietal region, but remained statistically significantly lower than in the control group. In a patient with DTA, the level of ATP before treatment in the anagenic bulbs of the occipital region was 1.8 ± 0.6 U.E., in the frontal-parietal region - 2.7 ± 2.2 U.E., which indicates a marked decrease in this indicator compared to the values of the control group. After 6 months of treatment, the ATP content in the anagenic bulbs and in the occipital and frontal-parietal regions increased statistically significantly compared to the initial values and reached 7.8±2.4 IU and 9.3±3.8 IU, respectively (*table 1*).

Table 1.

Dynamics of the studied indicators in the study groups

Parameters	Before treatment		After treatment	
	Main group	Control group	Main group	Control group
Hair density, per cm • occiput • front	123,5±25,9* 139,1±34,7*	187,4±14,3 179,9±23,1	136,6±18,5*'** 151,3±9,8*'**	204,3±22,7 176,0±20,5*

Hair diameter, μm • occiput • front	47,3±3,6* 52,5±4,9*	65,0±9,1 71,4±8,5	59,2±4,2*'** 60,5±3,1*'**	67,4±5,7 69,1±2,3
Percentage of telogen hair	26,8±3,4*	8,3±1,2	15,5±1,2**	6,9±4,4
ATP level, U. E. • occiput • front	1,8±0,6* 2,7±2,2*	11,3±8,6* 13,7±10,1*	7,8±2,4** 9,3±3,8**	9,2±5,4 13,0±7,6

The (*) sign marked statistically significant differences ($p \leq 0.05$): (*) - from the control group, (**) - from the initial values.

Good tolerance of the therapy was noted, and none of the patients had any adverse side effects or allergic reactions. Microscopic examination of the preserved hair roots in all patients with DTA, regardless of the duration of the disease, revealed pronounced dystrophy, deformation, and miniaturization of the anagenic hair follicles, and an increased content of telogenic hair. As a result of treatment, the quality of hair follicles improved, which was manifested in the smoothing of the cuticle, improvement of the reflectivity of the hair surface, and even distribution of cortical substance.

During the survey, patients with DTA noted not only a pronounced decrease in the intensity of hair loss, but also active growth of fluffy hair, an increase in volume, and apparent improvement in hair quality. The therapy effect was assessed by 5 patients as excellent, 16 as good, 7 as satisfactory, and 4 did not note positive dynamics. Result shows the total or subtotal form of alopecia is rare form of disease. After using combination we gain satisfactory result and therapy mostly can be effective procedure, decrease hair falling.

Conclusion. Combined therapy, including Excimer light phototherapy (308nm), ATP, and Actovegin, has a positive effect on the condition of hair follicles, ensuring prolongation of the anagen phase, reduction of the telogen phase, stimulation of new hair growth, in a patient with DTA, the level of ATP before treatment in the anagenic bulbs of the occipital region was 1.8 ± 0.6 U.E., in the frontal-parietal region - 2.7 ± 2.2IU, which indicates a marked decrease in this indicator compared to the values of the control group. After 6 months of treatment, the ATP content in the anagenic bulbs and in the occipital and frontal-parietal regions increased statistically significantly compared to the initial values and reached 7.8±2.4 IU and 9.3±3.8 IU respectively and can be recommended for patients with chronic idiopathic diffuse telogen alopecia.

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