

# Vitiligo Because of Determining the Content of Natural Antibodies to Various Organisms and Tissues of the Body and Detecting the General Somatic Status of Patients

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## ABSTRACT

Vitiligo disease is a violation of the color of the skin in the form of white spots, the histological examination of which reveals the absence or a sharp decrease in the content of melanin. Based on the determination of the content of natural antibodies to various organs and tissues of the body in the blood serum of patients with vitiligo, to assess the general somatic status of patients with vitiligo. The present study included 53 patients with various forms and stages of vitiligo, aged 12 to 59 years, who were on outpatient treatment at the clinic for skin and venereal diseases of the regional center of the city of Samarkand in the period from 2019 to 2021. To compare the results of laboratory studies, a group of 10 healthy donors was examined. It is necessary to conduct a full examination of patients with vitiligo in order to identify concomitant diseases and possible hidden trigger factors that provoke the development and progression of diseases. The most significant and convenient is the determination of the content of natural antibodies to various organs and tissues of the body by the ELI test, which allows you to identify somatic changes in patients with vitiligo, including at the preclinical stage of disease development.

**KEYWORDS:** *Vitiligo, Natural antibodies*

## Introduction

Externally, the disease of vitiligo is a violation of the color of the skin in the form of white spots, the histological examination of which reveals the absence or a sharp decrease in the content of melanin. Currently, there is an increase in the incidence of vitiligo among all ethnic groups of the world. So, if earlier the prevalence of vitiligo was 0.1% [Babayants R.C., Lonshakov Yu.I., 1978]. then at present this indicator varies from 0.3% in Great Britain, Italy, Turkey [Agusap O. et al., 2008], up to 4% in Mexico and up to 8.8% in India [Sehgal V.N., Srivastava G., 2007]. The pathogenesis of vitiligo is quite complex and affects almost all major systems of the body, which leads to a wide variability in the clinical picture of the disease and the results of treatment. Sufficient factual and theoretical material on the etiology and pathogenesis of vitiligo has been accumulated in the literature [Koshevenko Yu.N., 2002; Korsupskaya I.M. et al. 2003; Westerhof W., d'Ischia M., 2007; Picardo M., Taieb A. 2010], however, progress in understanding the causes and mechanisms of the development of the disease is insignificant, and existing methods of therapy are far from perfect. Currently, most researchers note the presence of

pronounced disorders in both cellular and humoral immunity in patients with vitiligo [Dvoryankova E.V. et al., 2006; Danelyan E.E. et al., 2007; Kemp E.H. et al., 2001]. But the studies mentioned above do not cover the entire spectrum of changes occurring in the immune system, they assess the population as a whole, do not take into account the stages and forms of the disease, which does not allow the development of a clear concept of immunotherapy for this disease. Over the past decades, foreign literature, thanks to technological and methodological advances in clinical genetics, has accumulated considerable experience in the study of polygenically inherited multifactorial diseases, which has led to attempts to map specific genes responsible for the tendency to develop vitiligo and its pathogenesis [Spritz R.A., 2007]. As a result, significant progress has been made in identifying genes responsible for the tendency to develop vitiligo, such as: NALP1, CAT, FOXD3, PTPN22, VIT1, CTLA4, ESR1, AIS2, MYG1, NLRP1, etc. [Casp C.B., 2002; Blomhoff A. et al., 2005; Ving Jin M.D. et al., 2007; Abanmi A. et al., 2008]. In connection with the above, further identification of genes that cause a tendency to develop vitiligo, which can subsequently become "targets" for new approaches to the treatment and prevention of this disease, is of great scientific and practical importance. One of the topical issues of the pathogenesis of vitiligo is its relationship with other diseases (autoimmune, etc.) and a number of congenital syndromes [Schallreuter K.W., 1994; Iacovelli P., 2005]. Nevertheless, a number of authors believe that there is no direct relationship between vitiligo and other diseases [Dvoryankova E.V., Tkachenko S.B., 2006]. This issue needs further in-depth study.

**Aim:** Based on the determination of the content of natural antibodies to various organs and tissues of the body in the blood serum of patients with vitiligo, to assess the general somatic status of patients with vitiligo.

**Materials and Methods:** This study included 53 patients with various forms and stages of vitiligo aged 12 to 59 years, who were on outpatient treatment at the clinic for skin and venereal diseases of the regional center of the city of Samarkand in the period from 2019 to 2021. To compare the results of laboratory studies, a group of 10 healthy donors was examined. Analysis of the clinical material was carried out on the basis of the history of life and disease, assessment of the general condition and local status of the patient. In each patient, the clinical form of the disease was determined according to the classification of vitiligo. The clinical examination included a general examination of the patient's

skin, an examination using a fluorescent lamp, and measuring the area of depigmented lesions using a ruler. The areas of each lesion were summarized and evaluated as a percentage relative to the body surface area. All patients underwent a clinical examination, including examination using a fluorescent lamp, history taking, determination of the area of lesions. Laboratory and instrumental studies included: - Clinical blood test; - Genotyping of single nucleotide polymorphisms (8MP genotyping) by pyrosequencing. Two genes were included as "candidate" genes in the study: OBC and SKVS; - Determination of the content of natural auto-antibodies to various organs and tissues in the blood serum; - Study of the subpopulation composition of T- and B-lymphocytes, analysis of the functional activity of T- and B-lymphocytes, as well as NK cells.

**Results and discussions:** Clinical characteristics of the examined patients with vitiligo. The average age of patients seeking medical help ranged from 12 to 59 years, among which the number of women was significantly higher than that of men.

Of the clinical forms of the disease, the vulgar form: multiple, randomly or (mostly) symmetrically located spots on the skin of the trunk, limbs and face was observed in 58 (76.3%) patients. Acrofacial: damage to the hands, feet, face in the periorbital and perioral areas - in 11 (14.4%). Focal: one or more spots in one area - in 5 (6.7%). Segmental: spot along the nerve or plexus - in 2 (2.6%) patients. The combination of vitiligo and Setton's nevus - depigmentation surrounding the birthmark was detected in 6 patients with the vulgar form of the disease. 2 patients had depigmentation of the scalp hair (leukotrichia).

In the course of the pathological process, 34 (44.8%) patients showed progression of the process over the past year; in 40 (52.6%) patients, the process could be characterized as stable. An unstable type of vitiligo (an increase in depigmented spots or the appearance of new ones, against the background of regression of existing ones) was observed in 2 (2.6%) patients. The analysis of comorbidity showed that 28 (36.8%) of our patients considered themselves to be "practically healthy" people. It should be noted that the study included patients whose comorbidities were in relative remission. Most often, our patients suffered from diseases of the gastrointestinal tract, liver and biliary tract - 29 (38.1%), thyroid gland (mainly women) - 11 (14.4%) and ENT organs - 8 (10.5%) patients.

In order to identify possible comorbidities in 25 patients with vitiligo who considered themselves "virtually healthy", we analyzed their serum levels of 24 auto-antibodies to various organs and systems. This group included 10 men and 15 women aged 18 to 44 years and disease duration from 1 to 32 years. The average duration of the disease was 10.5 years. Using standardized ELISA test systems of the ELI-TEST group in the blood serum of patients, the serum content of 24 auto-AT classes of different specificity (gG) to various organs and systems of the body was determined.

When analyzing the data we received, it is noteworthy that in 21 (84%) patients certain anomalies in the content of natural auto-antibodies of different specificity were detected, reflecting pathological changes in different organs and systems. Most often, 11 (44%) patients showed a significant increase in the content of auto-Abs to proteins 8100 (a trophic factor of serotonergic neurons) (Fig. 2). These results

are consistent with the position that one of the main factors provoking the onset of the disease or its further progression (in 30 - 50% of cases) is stress.

Another 10 (40%) patients had abnormalities in cardiomyocytes (CoM-02) and in 8 (32%) - in the conduction system of the heart (betaAR). It is possible that frequent disturbances in the psycho-emotional status of these patients may underlie cardiac disorders. More than a third - 9 (36%) patients had an increased amount of auto-AT to insulin (Insulin) to thyroglobulin (TG) - 9 (36%).

A significant increase in the content of auto-ABs to double-stranded DNA (esOHA) that we detected in 8 (32%) patients with vitiligo indicates an intensification of apoptosis of body cells induced by processes of any nature. The results of our study confirm the available data on the frequent combination (up to 30%) of vitiligo with changes in the nervous system and other diseases, including those at the preclinical stage of disease development. At the same time, quite often, the emerging disease was of an autoimmune nature (damage to the thyroid gland and pancreatic islet cells).

**Conclusions:** When analyzing the content of natural antibodies to various organs and tissues of the body in patients with vitiligo, data were obtained on the frequent combination (up to 30%) of vitiligo with changes in the nervous system and other diseases, including at the preclinical stage of their development. At the same time, quite often, the emerging diseases were of an autoimmune nature (damage to the thyroid gland and pancreatic islet cells). Thus, the determination of changes in the serum level of auto-AT is important both for predicting the nature of the course of vitiligo in a patient and for developing optimal treatment tactics.

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