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VITILIGO DISEASE: CAUSES, DIAGNOSIS, AND MODERN TREATMENT METHODS

Rajabova Sevinch Dilshodovna
Student of Samarkand State Medical University
A.E. Kubayev
Scientific Advisor: Lecturer at Samarkand State Medical University

Annotation: Vitiligo is a chronic dermatological disorder characterized by the partial or complete loss of melanin in localized areas of the skin, leading to the appearance of well-defined depigmented patches. The disease affects individuals of any age, sex, or ethnic background, with a global prevalence of 1–4%. Despite not being infectious or life-threatening, vitiligo significantly impacts patients' psychosocial well-being due to cosmetic concerns and social misconceptions. This article discusses the current scientific understanding of vitiligo with a focus on its etiopathogenesis, including genetic predisposition, autoimmune mechanisms, endocrine dysfunctions, and environmental triggers. Diagnostic approaches such as clinical examination, Wood's lamp assessment, and differential diagnosis are reviewed. Furthermore, modern treatment strategies are analyzed, including topical corticosteroids, calcineurin inhibitors, phototherapy (NB-UVB), laser therapy, immunomodulatory agents, melanocyte transplantation, and cosmetic methods such as camouflage and micropigmentation. The review emphasizes the importance of an individualized treatment plan and early intervention to improve therapeutic outcomes and quality of life in patients with vitiligo.

Keywords: vitiligo, melanin, skin, autoimmune disease, treatment, corticosteroids, phototherapy, immunomodulators, autotransplantation, melanocyte, camouflage, micropigmentation, depigmentation.

Introduction

Vitiligo (from the Latin vitiligo — "skin spots") is a chronic skin disorder characterized by the loss of pigment (melanin) in certain areas of the skin, commonly known among the public as "pes." This condition does not depend on age, gender, or race and affects 1–4% of the world population. In recent years, an increasing number of young people have been diagnosed with vitiligo.

Vitiligo is neither infectious nor allergic, meaning it does not spread to others. Despite this, society often holds misconceptions about the disease, such as believing it is hereditary or contagious. In reality, the development of vitiligo is mainly associated with genetic predisposition, autoimmune mechanisms, endocrine system disorders, and environmental factors.

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Causes of Vitiligo.

The causes of vitiligo are complex and multifactorial. Modern medicine identifies the following factors as the main causes:

- Chronic nervous tension and stress;
- Deficiency of vitamins and microelements (copper, zinc, iron);
- Diseases of internal organs (liver, stomach, gallbladder, pancreas);
- Endocrine system disorders (reduced thyroid gland activity);
- Hormonal changes (puberty, pregnancy, menopause);
- Presence of parasites in the body (giardia, roundworms, etc.);
- Weak immune system and environmental factors.

When these factors act collectively, the likelihood of developing vitiligo increases.

Course of the disease and clinical signs.

The signs of vitiligo usually manifest as white patches that appear due to a decrease or absence of skin pigmentation. These patches may enlarge and merge with each other, but the affected skin does not lose sensitivity. Additionally, hair on the patches tends to turn white, and sensitivity to sunlight increases.

Before the patches appear, slight itching or dryness of the skin may be observed. Many patients struggle to accept the changes in their appearance, which can lead to psychological distress.

Diagnosis.

In the diagnosis of vitiligo, the doctor examines the patient's overall health, nervous system, and the functioning of the liver and endocrine system. If necessary, the following tests are performed:

- Thyroid gland function tests (hormone levels);
- Ultrasound examination of internal organs;
- Blood and stool tests (to detect parasites);

Assessment of skin depigmentation using a Wood's lamp.

Treatment methods.

Treatment of vitiligo requires an individual approach. Depending on the cause of the disease, the extent of spread, and the patient's age, various methods may be applied.

1. Treatment with topical corticosteroids

- These are anti-inflammatory hormonal medications applied to the skin in the form of ointments or creams. They suppress the immune response, slow down the destruction of melanocytes, and help restore pigmentation.
- Most commonly used medications include:

Clobetasol propionate (0.05%) – strong effect, for short-term use;

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Betamethasone valerate (0.1%) – moderately

effective;
Hydrocortisone (1%) – mild form, for face and sensitive skin;

Mometasone furoate – long-acting, with few side effects.

2. Phototherapy
This method stimulates the activity of melanocytes using ultraviolet rays (UVB).

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Types of phototherapy:
• Narrow-band UVB (311–313 nm) — the most effective and safe method, suitable for children and pregnant women.
• PUVA therapy (Psoralen + UVA) — has a stronger effect, but more side effects are observed.
3. Immunomodulators
A treatment method with drugs that regulate the immune system (Tacrolimus, Pimecrolimus), especially effective on the face, neck and delicate parts of the body.
4. Surgical and cosmetic methods
In some cases, the following procedures are used:
Autotransplantation — the epidermis layer is transplanted from healthy skin;
Melanocyte transplantation — pigment cells are transplanted;
Camouflage, micropigmentation and depigmentation — to improve the cosmetic appearance.
Conclusion: Treatment of vitiligo requires an individual approach. Depending on the cause of the disease, the degree of its spread and the age of the patient, different methods are used.
These are hormonal anti-inflammatory drugs that are applied to the skin in the form of ointments (ointments, creams). They suppress the immune system, slow down the destruction of melanocytes and help restore pigment.
The use of drugs from the Psoralen plant in the treatment of this disease leads to effective results. Below we provide information about this medicinal plant.
Psoralen Plants:
Plants such as Psoralea corylifolia (Babchi) and Ammi majus Linnaeus contain the substance psoralen. Psoralen preparations (plant-derived or synthetic) are used in combination with light therapy (phototherapy) (PUVA therapy).

These substances make the skin sensitive to ultraviolet rays and help stimulate repigmentation. These drugs should be used with great caution, only under the supervision of a doctor, as improper use can lead to skin burns.

Conclusion: Vitiligo is not a contagious or allergic disease, that is, it is not transmitted to others. Despite this, misconceptions about this disease are widespread in society - the idea that it is “passed on from generation to generation” or “contagious”. In fact, genetic predisposition, autoimmune mechanisms, endocrine system disorders and environmental factors play a major

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role in the development of this disease. Modern medical methods are more effective in treating vitiligo. Consult your doctor before using medicinal plants.
The most important thing is the patient's self-confidence, mental stability and full compliance with the doctor's instructions. Early diagnosis and comprehensive treatment significantly improve the patient's quality of life.

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