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JOURNAL OF NURSING AND WOMEN'S HEALTH
ISSN(Online): 2984-8083
Volume-9, Issue-01, Published |13-03-2026|

VITILIGO: ETIOLOGY, CLINICAL FEATURES AND MODERN TREATMENT APPROACHES

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ABSTRACT

Vitiligo is a chronic skin disorder characterized by the loss of melanocytes, leading to depigmented white patches on the skin. The disease affects approximately 1–2% of the global population and can occur at any age. Although vitiligo does not directly threaten life, it has significant psychological and social impacts. The aim of this article is to review the etiology, clinical manifestations, pathogenesis, and modern treatment approaches of vitiligo. Understanding the mechanisms of melanocyte destruction and immune dysregulation is essential for improving diagnostic and therapeutic strategies.

Keywords: vitiligo, depigmentation, melanocytes, autoimmune disease, dermatology

INTRODUCTION

Vitiligo is an acquired pigmentation disorder of the skin characterized by well-defined white patches caused by the destruction or dysfunction of melanocytes, the cells responsible for producing melanin.

The condition affects individuals of all ages and ethnic groups. Although vitiligo is not contagious or life-threatening, its visible manifestations often lead to psychological distress and reduced quality of life. The exact cause of the disease is still not fully understood, but several factors such as autoimmune reactions, genetic predisposition, oxidative stress, and environmental triggers have been implicated.

Early diagnosis and appropriate management are important for controlling disease progression and improving patient outcomes.

METHODS

This study is based on a **review of scientific literature** related to vitiligo pathogenesis, diagnosis, and treatment. Data were collected from medical textbooks, dermatology journals, and international medical databases.

The analysis included:

- clinical studies on vitiligo prevalence
- dermatological research on melanocyte destruction
- treatment outcomes reported in clinical trials
- histological and clinical observations

The collected information was analyzed and summarized to provide a comprehensive overview of the disease.

RESULTS

Clinical Manifestations. Vitiligo typically presents as **well-demarcated white patches on the skin** that may gradually enlarge over time. These lesions commonly appear on the face, hands, feet, and around body openings such as the eyes and mouth.

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Figure 1–4. Clinical appearance of vitiligo showing depigmented patches on different body regions.

The disease may present in different clinical forms:

- **Segmental vitiligo** – localized to one area of the body
- **Non-segmental vitiligo** – the most common form, with symmetrical lesions
- **Universal vitiligo** – widespread depigmentation affecting large body areas

Vitiligo lesions are often symmetrical and may increase in size with time.

Histopathological Changes. Vitiligo involves structural changes in the epidermis, particularly the loss or reduction of melanocytes.

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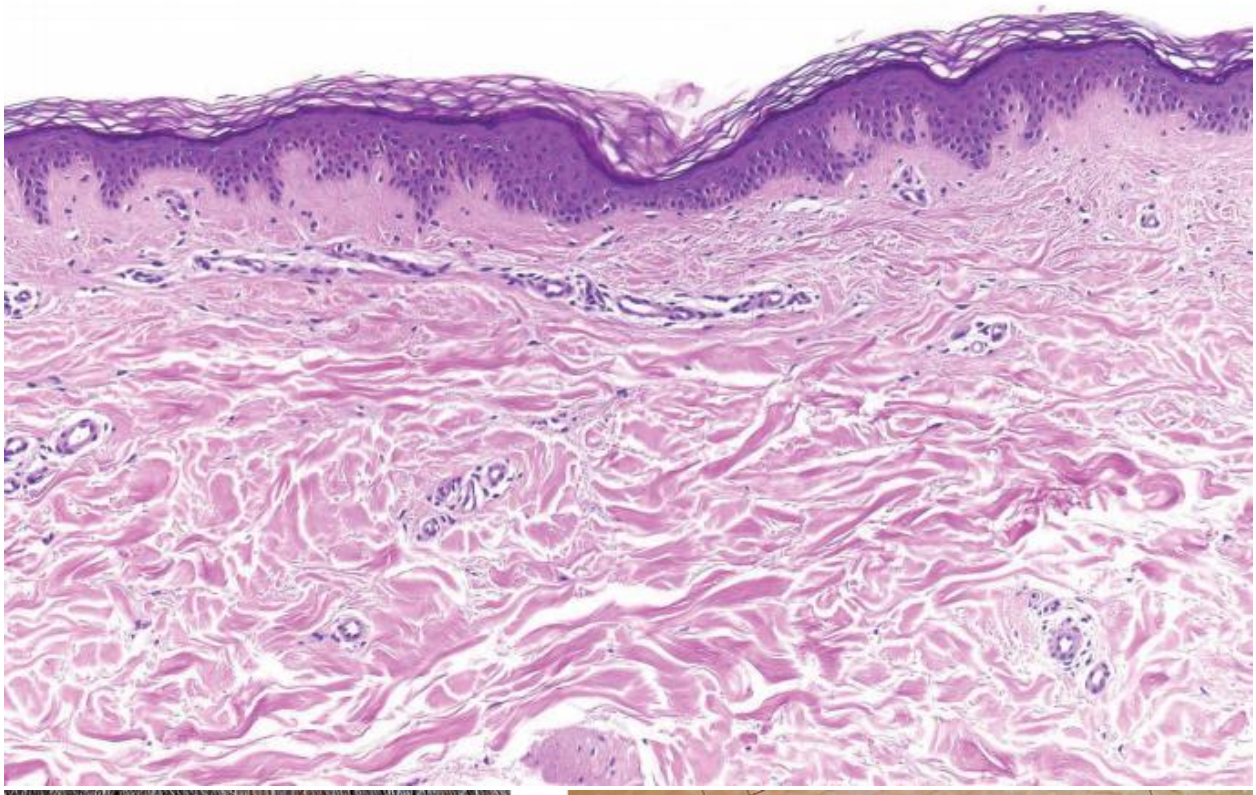

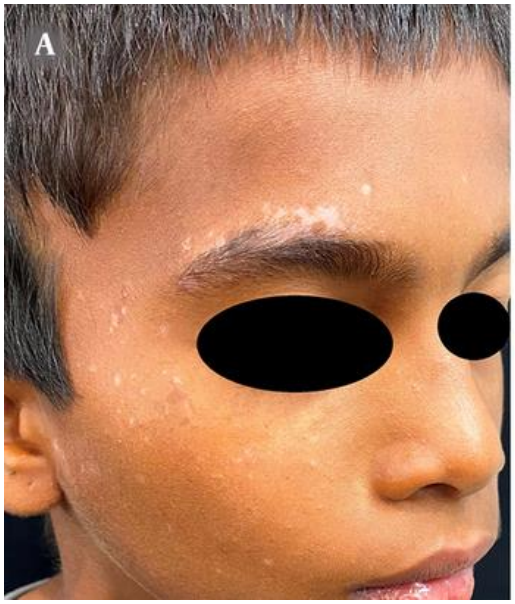

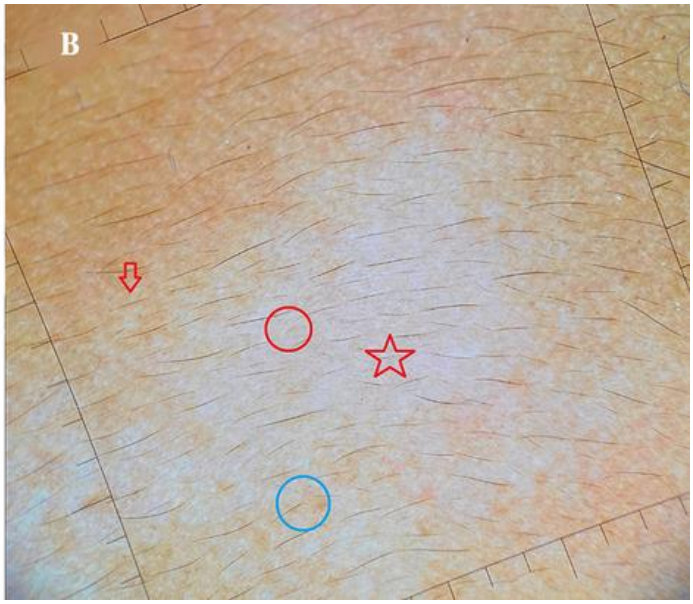

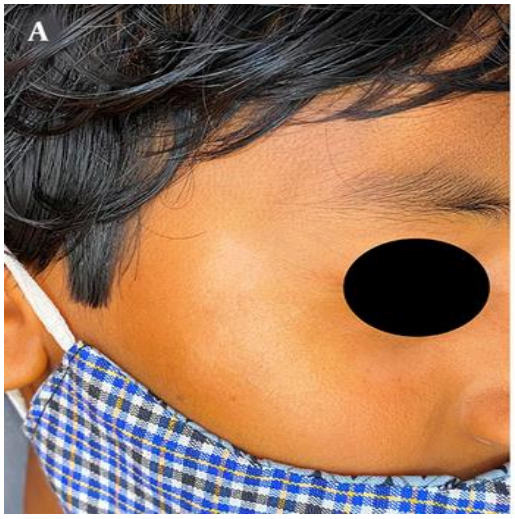

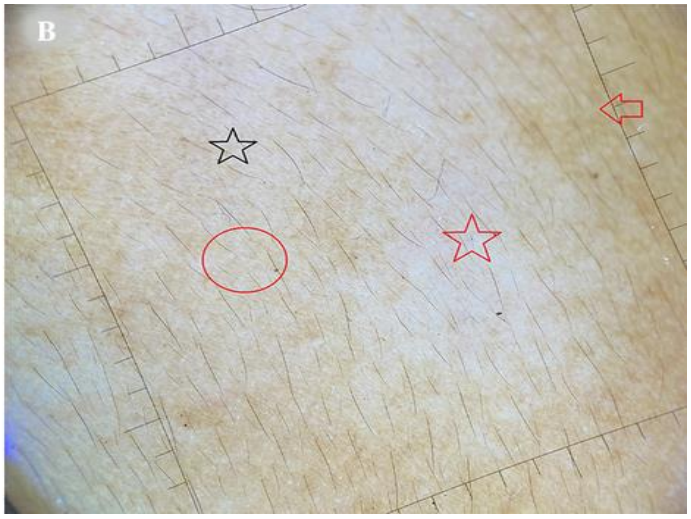

Figure 5–7. Histological and dermoscopic features of vitiligo showing reduced melanocytes and depigmented epidermis.

Microscopic findings include:

- absence or decreased number of melanocytes
- inflammatory infiltrates in early stages
- damage to basal epidermal cells

These findings support the theory that vitiligo may have an **autoimmune component**, where the immune system attacks melanocytes.

DISCUSSION

The pathogenesis of vitiligo is complex and multifactorial. Several hypotheses explain melanocyte destruction:

Autoimmune Hypothesis. The immune system mistakenly attacks melanocytes, leading to their destruction. Vitiligo is often associated with other autoimmune diseases such as thyroid disorders.

Genetic Factors. Family history increases the risk of developing vitiligo, suggesting a genetic predisposition.

Oxidative Stress. Increased oxidative stress may damage melanocytes and disrupt melanin production.

Environmental Factors. Chemical exposure, skin injury, or severe stress may trigger the onset of vitiligo in susceptible individuals.

Although there is currently **no definitive cure**, several treatment options can help restore pigmentation or slow disease progression.

Common treatments include:

- topical corticosteroids
- calcineurin inhibitors
- phototherapy (narrow-band UVB)
- excimer laser therapy
- surgical melanocyte transplantation in stable cases

Psychological support is also important because the disease may affect patients' self-esteem and social interactions.

CONCLUSION

Vitiligo is a chronic dermatological condition characterized by depigmented patches caused by the loss of melanocytes. Although the disease is not life-threatening, it can significantly affect patients' psychological well-being and quality of life.

Current research suggests that vitiligo results from a combination of autoimmune, genetic, and environmental factors. Advances in dermatological therapy, including phototherapy and cellular transplantation techniques, provide promising opportunities for improving treatment outcomes. Continued research is necessary to fully understand the mechanisms of the disease and develop more effective therapies.

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