Junior researchers

ახალგაზრდა მკვლევარები

Vol. 3 Issue 2, 2025

https://doi.org/10.52340/jr.2025.03.02.05

# The Skin Speaks First: Uncovering the Early Diagnostic Potential of Parkinson's Disease Through Dermatological Manifestations

**Hetvi Patel, DTMU**

**Introduction**:

Parkinson disease has potential non-motor diagnosis factors beyond the primary motor symptoms (such as bradykinesia, rigidity, or resting tremor) that are easy to overlook. Many patients also experience non-motor symptoms, which can show up years before the motor manifestations. Some of the symptoms that occur in the "non-motor" category associated with PD are skin-related symptoms. Research suggests that up to 98.6% of people with Parkinson's report some form of skin manifestation. These signs might not just be side effects but instead, could be early clues. This objective of this review is to explore whether certain common skin conditions in PD, like seborrheic dermatitis and melanoma, could help us with determining the diagnosis of an underlying undetected Parkinson's disease sooner, by utilizing simple non- invasive applications.

**Methods:**

A targeted literature search was performed on PubMed up to January 2025 using keywords such as "Parkinson's disease," "skin changes," "seborrheic dermatitis," and "melanoma." The main aim is the skin disorders linked to Parkinson's mainly seborrheic dermatitis and melanoma and how these conditions relate to early diagnosis.

**Results:**

There are many dermatological disorders identifiable within the diagnosis of Parkinson's Disease. Roughly 50% of associated persons will have seborrheic dermatitis. It is thought to be associated with changes in dopamine that creates loads of sebum, with associated inflammatory issues. Melanoma is seen to have association to PD, due to overlapping genotypes, such as genetic mutations in LRRK2, and SNCA (some of these may have potential roles in dopamine metabolism). One of the most notable findings reported is identifying misfolded alpha-synuclein, key marker for Parkinson's in the skin

nerve fibers via punch biopsy. This leads to the opening of the door of using the skin for non-invasive testing for early diagnosis of PD.

## Conclusion:

Skin symptoms in Parkinson's disease are not just cosmetic, they can reflect changes occurring deep within the nervous system. Conditions like seborrheic dermatitis and melanoma may show up before any motor signs, making them useful early indicators. The discovery of misfolded alpha-synuclein in skin nerve fibers supports the idea that the skin can act as a window into the disease. Recognizing these signs could help in diagnosing Parkinson's earlier and aid in primary care for the patients.

**Keywords:** Parkinson's disease, dermatological manifestations, seborrheic dermatitis, melanoma, early diagnosis

## References:

1. Ernst C, Sharma A, El Haj M, Loeb GE, Jahanshahi M, Krack P. Skin disorders in Parkinson's disease: potential biomarkers and risk factors. Clin Cosmet Investig Dermatol. 2017;10:87–92. doi:10.2147/CCID.S1303192. Tagliafierro L, Chiba-Falek O. Upstream targets of α-synuclein as therapeutic targets for Parkinson's disease. Mov Disord Clin Pract. 2016;3(4):364–372. doi:10.1002/mdc3.12425
2. Ravn AH, Thyssen JP, Egeberg A. Skin disorders in Parkinson's disease: potential biomarkers and risk factors. Clin Cosmet Investig Dermatol. 2017;10:87–92.
3. Buhmann C, Kassubek J, Jost WH. Skin and Parkinson's disease: More than just seborrheic dermatitis. J Neural Transm. 2017;124(3):277–81.
4. Arsenijević VA, Milobratović D, Barac AM, Vekic B, Marinković J. Skin changes in Parkinson's disease. Med Pregl. 2014;50(3):220–4.
5. Donadio V, Incensi A, Leta V, et al. Skin nerve alpha-synuclein deposits: a biomarker for idiopathic Parkinson disease. Neurology. 2014;82(15):1362–9.
6. Li Y, Ge S, Peng C, et al. Skin α-synuclein aggregation seeding activity as a novel biomarker for Parkinson disease. Front Aging Neurosci. 2020;12:580641. doi:10.3389/fnagi.2020.580641