



Original Investigation | Neurology

In patients with Alzheimer's or Parkinson's disease, does correction and adjustment of the gut microbiome improve cognitive function or slow the progression of neurodegenerative symptoms or is standard treatment a better method?

Awad El-Hakeem¹, Sajal Agarwal¹, Syed K Ayaanuddin¹, Arian Hizomi¹

MD Tbilisi State Medical University (TSMU)¹

Key Points

Question:

Can gut microbiome modulation improve cognitive function or slow neurodegenerative symptoms in Alzheimer's or Parkinson's compared to standard treatments?

Findings:

Standard treatments remain effective for symptom management. Gut microbiome interventions show promise in reducing inflammation and enhancing neurotransmitter balance. Current evidence suggests microbiome interventions may complement standard treatments but are not yet primary therapies.

Meaning:

Gut microbiome modulation has potential as a supportive therapy for neurodegenerative diseases, but further research is needed to validate its efficacy and long-term impact.

Abstract

Importance:

The gut-brain axis plays a significant role in neurodegenerative diseases like Alzheimer's and Parkinson's. Emerging research highlights the potential of gut microbiome interventions in influencing cognitive function and disease progression.

Objective:

To assess whether correcting and adjusting the gut microbiome improves cognitive function or slows the progression of neurodegenerative symptoms compared to standard treatments such as levodopa for Parkinson's and cholinesterase inhibitors for Alzheimer's. Challenged by the limitation and the incapacity, scientists and researchers have developed a brain-computer interface technology (BCI) that enables direct communication between the brain and external computing devices independently of the peripheral nerves or muscles augmenting human capabilities in interacting with the physical environment.

Evidence Review

A systematic review of studies evaluating the effects of gut microbiome modulation (probiotics, prebiotics, dietary modifications, fecal microbiota transplantation) and standard treatments on cognitive function and neurodegenerative symptom progression.

Findings

Standard treatments remain the most reliable method for symptom management and slowing disease progression. Gut microbiome interventions reduce inflammation, improve neurotransmitter balance, and may complement standard treatments. Mechanisms of the gut-brain axis require further investigation to establish microbiome modulation as a primary treatment option.

Conclusion and Relevance

Gut microbiome interventions may provide additional benefits alongside standard treatments for neurodegenerative diseases. Further research and clinical trials are essential to clarify their role in therapeutic practice and assess their long-term impact.

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Corresponding Author: Awad El-Hakeem, MD Tbilisi State Medical University (TSMU).

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