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Temporal stability of gut microbiota composition in relation to clinical features in Parkinson's disease

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Introduction: The concept of "gut–brain axis" was first introduced in the late 2000s [1] and later reviewed to include the role of the gut microbiota, turning it into the "microbiota–gut–brain axis". In the last years, several studies focused on the specific role of altered gut microbiota in PD [2]. Most of them, however, did not analyse the modifications of the gut microbiota composition over time.

Objective: We aim to investigate the composition of gut microbiota and clinical features of the disease in our study population over a period of 14 months.

Methods: We compared gut microbiota composition in 18 PD patients and 13 healthy controls (HC) at baseline and 1 year later. PD patients and HC underwent a faecal sampling at baseline and one year later for 16S rRNA amplicons analysis. PD patients also underwent clinical examinations, performed using Hoehn & Yahr (H&Y) staging scale and Movement Disorder Society Unified PD Rating Scale (MDS-UPDRS) part III at baseline and at the follow-up visit.

Results: Results demonstrated stability in microbiota composition in both groups over a period of 14 months: both the number of species (alfa diversity) and the structure of gut microbiota community (beta diversity) did not undergo significant modifications. Differences in microbiota composition between PD patients and HC remained stable over time. Moreover, clinical features of the disease evaluated through clinical scales remained unchanged.

Conclusion: Our findings highlight microbiota stability over time. Consistently, PD patients did not show any clinical progression. In our opinion, these results may reinforce the idea of a correlation between clinical and microbiota stability over time, supporting the pathogenic role of gut microbiota change in PD patients. These results may open the scenario to more extensive longitudinal evaluations with a larger PD patient population at different stages of the disease.

References:

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