Insular functional connectivity

Functional connectivity (FC) changes can occur prior to structural changes. A study by Byun et al. aimed to evaluate data-driven whole-brain FC associated with isolated rapid eye movement sleep behavior disorder (iRBD) using multivariate pattern analysis (MVPA).

This was a cross-sectional study of 50 polysomnography-confirmed iRBD patients and 20 age- and sex-matched controls. We used MVPA implemented in the connectome-MVPA CONN toolbox to identify data-driven seed regions for post hoc seed-to-voxel connectivity analysis. The association between FC changes and clinical characteristics, including cognition, depression, autonomic function, and daytime sleepiness, was evaluated.

MVPA revealed one significant cluster located in the left posterior insular cortex. Seed-to-voxel FC analysis using the cluster as a seed showed significantly reduced FC with two clusters located in the precuneus in iRBD patients compared to the controls. The degree of FC was associated with the Montreal Cognitive Assessment-Korean version scores ($r = 0.317$, $p = 0.025$).

This study emphasizes the insula as an important neural correlate associated with iRBD that was associated with cognitive function [1].

1)
Byun JI, Cha KS, Kim M, Lee WJ, Lee HS, Sunwoo JS, Shin JW, Kim TJ, Moon J, Lee ST, Jung KH, Chu K, Kim MH, Kim HJ, Shin WC, Lee SK, Jung KY. Altered insular functional connectivity in isolated REM sleep behavior disorder: a data-driven functional MRI study. Sleep Med. 2021 Jan 2;79:88-93. doi: 10.1016/j.sleep.2020.12.038. Epub ahead of print. PMID: 33485260.