

The Role of the Central Autonomic Nervous System and Psychosocial Factors in Microvascular Angina and Takotsubo Syndrome

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Purpose: We hypothesised that takotsubo syndrome (TTS) and primary microvascular angina (MVA) may exhibit peculiar functional organisation of the central autonomic nervous system network (CAN) at rest, as well as specific psychological patterns, when compared to patients with acute MI (AMI).

Design and methods: We prospectively enrolled patients in three groups: MVA, after TTS or AMI. Subjects underwent a clinical-diagnostic interview, Million Clinical Multiaxial Inventory III, State-Trait Anxiety Inventory form Y and short form (SF-36) Health Survey quality of life questionnaire. Patients underwent a blinded resting state functional MRI (RS-fMRI), to compare the intrinsic connectivity strength among the CAN nodes.

Results: We evaluated 50 matched patients (46 women; 16 MVA, 17 TTS, 17 AMI). There was a high prevalence of obsessive-compulsive personality disorder. MVA showed a significantly lower SF-36 Body-Pain score than AMI ($p=0.046$) and a significantly higher SF-36 Mental-Health score than AMI ($p=0.039$). RS-fMRI in TTS showed stronger connectivity between two nodes of the sympathetic (midcingulate cortex) and parasympathetic (sub-central motor area) CAN ($F 6.25, p=0.005$).

Conclusion: The peculiar self-reported body pain and mental health in MVA, as well as the increased level of functional integration between areas of the CAN subdivisions in TTS, may link psychosocial distress with clinical manifestations. These data are hypothesis-generating for future potential endorsement of psychotherapy and stress-reducing techniques as therapeutic strategies. ■