

Interpersonal reactivity index, autonomic, and metabolic function in pre-symptomatic frontotemporal degeneration

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State of the art: Empathy deficits in symptomatic frontotemporal degeneration (FTD) have been linked to cardiometabolic dysfunction, however, less is known about relations between empathy and cardiometabolic dysfunction in pre-symptomatic FTD. This study evaluates longitudinal change in resting heart rate (RHR) and blood pressure (BP) in cognitive and emotional empathy over time in a sample of asymptomatic FTD pathogenic mutation carriers (preFTD+) and non-mutation carrier family members (FTD-).

Methodology: RHR, BP, and Interpersonal Reactivity Index (IRI) assessments were obtained at baseline and follow-up (M=1.97 years, SD=0.83) for 34 preFTD+ and 32 FTD-. IRI Perspective Taking and Empathic Concern subscales were used to characterize cognitive and emotional empathy, respectively. Linear regression analyses related annualized change in RHR and BP to annualized change in IRI subscales.

Results: Decrease in IRI Perspective Taking was associated with mutation status ($\beta=0.02$, $p=.018$) and increased age ($\beta=0.11$, $p=.018$), but not associated with annualized change in RHR ($\beta=0.13$, $p=.21$) or BP ($\beta=9.37$, $p=.10$). In contrast, decrease in annualized IRI Empathic Concern did not associate with mutation status ($\beta=4.01$, $p=.26$), but was associated with increased annualized change in RHR ($\beta=0.29$, $p=.015$) and not BP ($\beta=-2.20$, $p=.72$).

Conclusions: Annualized decline in cognitive, but not emotional, empathy is evident in preFTD+ relative to FTD-. Individuals with increasing RHR showed greater decline in emotional, but not cognitive, empathy regardless of mutation status. These findings converge with prior evidence showing stronger physiologic contributions to emotional relative to cognitive empathy in symptomatic FTD and suggest IRI Perspective Taking may reflect pre-manifest FTD.

Conflicts of interest

N/A