Higher resting baroreflex sensitivity is associated with cognitive flexibility in healthy older adults

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Résumé

The neurovisceral integration model suggests that resting heart rate variability (HRV), an index of cardiac autonomic control, is related to prefrontal cortical activity and may predict cognitive performance. Given that baroreflex sensitivity (BRS) contributes to HRV regulation, we hypothesized that BRS would predict cognitive performance and specifically executive function in healthy older adults. This study aimed to further investigate this model by investigating the relationship between resting-state BRS and several cognitive domains and more particularly with several executive functions. Resting-state BRS and cognitive performance were assessed in 46 healthy older adults. BRS was measured non-invasively using the Finapress system, and cognitive function was evaluated through the evaluation of psychomotor speed, memory, and executive function (inhibition, working memory and flexibility). Participants were categorized into higher- and lower-BRS groups using a median split based on BRS levels. To test our hypothesis, we conducted correlation analyses between BRS and cognitive performance. Additionally, we performed a t-test between BRS groups and a two-way repeated measures ANOVA (BRS x cognitive task difficulty) to test the null hypothesis of no interaction between BRS and cognitive performance. Among the cognitive functions assessed, only executive functions, specifically cognitive flexibility, showed a significant correlation with BRS. Participants with higher resting-state BRS demonstrated better cognitive flexibility, evidenced by faster reaction times and a greater number of correct responses in the Stroop test. Since autonomic dysregulation may precede cognitive decline, our findings contribute valuable insights into the neurovisceral integration model and its role in cognitive control in older adults.

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