THE ASSOCIATION OF BRAIN-DERIVED NEUROTROPIC FACTOR VAL66MET POLYMORPHISM WITH STROKE OUTCOMES: A CROSS-SECTIONAL STUDY

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Background and Aims

Stroke is the leading cause of long-term disability in the United States. Post-stroke recovery can be highly variable, suggesting the need to elucidate responsible mechanisms, such as brain-derived neurotropic factor (BDNF) Val66Met polymorphism. The aim of this study was to investigate the effect of BDNF Val66Met polymorphism on post-stroke outcomes including quality of life, physical fitness, cognitive function, quality of life, overall disability, and depression.

Methods

We included stroke participants enrolled in a Randomized Trial of Combined Aerobic, Resistance, and Cognitive Training who underwent a three-month exercise and cognitive training program. Of 131 participants enrolled in the trial, 89 participants (68%) had data available on BDNF Val66Met polymorphism and stroke outcomes (mean age, 57±10 years; 58% male; 54% White, and 49% Hispanic). The difference between Met-carriers and non-Met carriers were analyzed for 89 participants and in pair-matched analysis, using age (±5), sex, time since stroke (<3 months, 3-6 months, and >6 months after a stroke), and race (White, Black, or other/unknown race). Both main and ancillary studies were approved by the Institutional Review Board at the University of Miami.

Results

Twelve participants (13%) had one copy of the BDNF Val66Met (Val/Met heterozygotes) and none had two copies (Met/Met homozygotes). Comparing Met (n=12) and non-Met carriers (n=77) demonstrated no statistically significant differences in demographics or clinical characteristics, including motor or cognitive outcomes. In pair-matched analysis, the significant difference was observed for Center of Epidemiological Studies Depression (CES-D) scale, where Met carriers had significantly greater CES-D scores than non-Met carriers (24±16 vs 9±9, p=0.011). Regardless of the chosen CES-D cut-off scores (≥16 vs ≥20) more cases of depressive symptomatology were observed among those with the BDNF Val66Met polymorphism than those without it (p values = ≤0.05).

Conclusion

The BDNF Val66Met polymorphism is associated with depression but not physical and cognitive outcomes post-stroke.

Keywords: stroke, recovery, polymorphism, BDNF, depression