Exploring Emotional Reactivity, Balance, and Depression Risk in Fragile X Premutation Carriers

Abstract

Estimated to affect approximately 7% of adults in the United States, major depressive disorder (MDD) is a devastating mental illness that has been shown to have a profoundly negative impact on quality of life, productivity, general health, and lifespan. Recent research has indicated carriers of the FMR1 premutation, previously thought asymptomatic, are at increased risk of disorders such as Fragile X Tremor Ataxia Syndrome (FXTAS) and Fragile X Associated Neuropsychiatric Disorders (FXAND), including depression. The etiology of the latter is poorly understood. The present study considered this population with the goal of exploring risk factors for depression associated with the FMR1 premutation. A total of 38 participants, 20 controls and 18 premutation carriers were assessed in the study. Current depressive and anxious symptomatologies were assessed using the Depression Anxiety Stress Scales (DASS). We examine the late positive potential (LPP) as a known neural indicator of depression risk in the general population but one that is unknown in the population with the FMR1 premutation. As a measure specific to the FMR1 premutation and risk for FXTAS, we also measured motor control using the NIH Toolbox Standing Balance Task. Data showed no significant difference between groups on self-reported symptoms of anxiety and depression. There was also no significant difference between groups in LPP amplitude as a response to emotional stimuli between premutation carriers and controls. Balance scores on the NIH Toolbox correlated with LPP amplitude in premutation carriers. These data suggest a possible mechanistic relationship between FXTAS and depression in the FMR1 premutation.

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