Brain structure and joint hypermobility: relevance to clinical anxiety disorder

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Not peer-reviewed
Accepted: 7\textsuperscript{th} April 2018
Available online: 29\textsuperscript{th} December 2018

Keywords: conference abstract  poster presentation

Abstract

Introduction: Joint hypermobility is a common but often poorly recognised, life altering, connective tissue condition. Individuals with hypermobility are overrepresented among those with panic/anxiety disorders. Previous work at Brighton and Sussex Medical School produced imaging studies of joint hypermobility in healthy volunteers, observing differences in brain regions, notably enlarged amygdala volume. This novel study extends this work by investigating structural brain correlates of hypermobility syndrome (HMS) in clinical anxiety disorder.

Methods: Seventy participants were divided into four experimental groups: (2x2 factor design: presence/absence of hypermobility; presence/absence of anxiety). The participants with hypermobility syndrome, met the Brighton Criteria. Among the participants with clinical anxiety, their generalised anxiety disorder (GAD) was determined by the MINI (MINI International Neuropsychiatric Interview). All participants underwent tests of autonomic function and interoception. Structural brain images were obtained using a 1.5T MRI scanner.

Results: Grey matter volume comparisons revealed amygdala size correlated with hypermobility score in anxious patients, but there was no correlation in non-anxious individuals. Additionally, it was found that insula volume is increased in the anxious group for those with HMS. The study therefore for the first time implicated the amygdala and insula as likely neural substrates mediating clinical relationships between hypermobility syndrome and anxiety. Participants also underwent tests of autonomic function and interoception to further extend understanding of autonomic abnormalities.

Conclusions: In light of these novel findings, future work in the department will include investigation of neural functional and structural connectivity.