Abstract

Background: Recent research revealing various cognitive dysfunctions in irritable bowel syndrome (IBS) failed to address whether they were trait characteristics, reflected key pathophysiological processes, or were a result of psychiatric comorbidity. We compared the cognitive function of IBS patients with healthy subjects, and examine their relationships with 1. constipation/diarrheal subtype, 2. bowel symptom severity and chronicity and 3. psychiatric comorbidity.

Method: We consecutively recruited 40 IBS patients (20 diarrhea-predominant [IBS-D] and 20 constipation-predoinant [IBS-C] subtypes) and 40 age/sex/education-matched healthy controls. Cognitive assessments included Continuous Performance Test, Wisconsin Card Sorting Test and a modified emotional Stroop Test. Beck Anxiety Inventory (BAI), Beck Depression Inventory (BDI) and Patient Health Questionnaire-15 (PHQ-15) measured anxiety, depressive symptoms and somatisation respectively. Comorbid psychiatric diagnoses were ascertained with SCID-I (Structured Clinical Interview for DSM-IV Axis I Disorders). Current bowel symptoms were assessed with a standardised questionnaire.

Results: IBS patients had significantly increased standard deviation of reaction time (SDRT) (70.49ms vs 94.10ms, $p<.003$), failure to maintain set (0.42 vs 1.15 , $p=.002$) and %perseverative errors (11.62% vs 15.27%, $p=.003$), signifying impaired sustained attention, distractibility and inhibitory dysfunction. No between-group difference was found in Emotional Stroop test. We were unable to detect any cognitive differences between IBS-C and IBS-D. 18 IBS patients currently met DSM-IV criteria for Generalised Anxiety Disorder (GAD), 1 with both GAD and Dysthymia. None currently fulfilled criteria for any other mental disorders. No significant differences in cognitive function was found between IBS patients with comorbid

GAD (IBS-GAD) (n=17) and those without (pure IBS) (n=22) (ps>0.1). Pure-IBS had significantly increased SDRT (p=.012), failure to maintain set (p=.003) and %perseverative errors (p=.015), compared to healthy controls. Bowel symptoms significantly correlated with failure to maintain set. Neither bowel symptom chronicity , nor BAI or BDI correlated with any cognitive parameters. In logistic regression models controlled for BAI, BDI and PHQ-15, SDRT (AOR=1.08, p=.025), but not failure to maintain set (p=.25) or %perseverative errors (p=.24), significantly differentiated IBS patients from controls.

Conclusion: IBS patients were found to have impaired sustained attention, distractibility and inhibitory dysfunction. Impaired sustained attention is likely of trait nature that is independent of anxiety/depressive comorbidity. IBS-C and D subtypes appeared cognitively similar. There may be a substantial overlap of cognitive mechanisms underlying GAD and IBS.

Keywords: Irritable bowel syndrome; cognitive function; attention; frontal executive function