Brain-Gut Interactions in Irritable Bowel Syndrome (IBS)

Akademisk avhandling

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Fredagen den 18 januari, klockan 09:00.

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Abstract
Irritable bowel syndrome (IBS) is a common disorder of gut-brain interaction defined by recurrent and longstanding abdominal pain and disturbed bowel habits. This thesis aims to deepen the knowledge about aberrant visceral sensory processing seen in a large group of patients with IBS, with particular focus on central mechanisms. The methods used were rectal balloon distensions using a barostat to evaluate rectal sensitivity, structural magnetic resonance imaging of the brain to investigate regional gray matter properties, and questionnaires to assess psychosocial factors, gastrointestinal and multiple somatic symptoms (somatization).

Anxiety, depression and somatization were all associated with increased pain intensity ratings in hypersensitive IBS patients. Non-painful intensity ratings were influenced only by anxiety and to the same extent in normo- and hypersensitive IBS patients. Somatization was further associated with several measurements of rectal pain sensitivity, and mediated the effects of depression and GI-specific anxiety on rectal pain perception. Sex, age and sexual abuse in adulthood were also associated with rectal pain sensitivity.

The level of somatization in IBS was related to differences in local gray matter network connectivity, mainly in regions of the prefrontal cortex, insula and cerebellum. The increased importance of prefrontal cortex and decreased importance of insula implies that cognitive aspects are more important than primary viscerosensory aspects in the neurobiological sensitization process in IBS patients with high levels of somatization. Gray matter morphometry differences between IBS and healthy controls in sensorimotor network seem to be related to psychological distress in women, but not in men.

In conclusion, somatization, measured as multiple somatic symptoms, is important for visceral (hyper-) sensitivity in IBS, and associated with altered structural connectivity within the brain.

Keywords: visceral sensitivity, anxiety, depression, somatization, central sensitization, gray matter morphometry