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Cortical response to biliary sensation

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Elevated pressure of the extrahepatic bile duct may elicit a variety of symptoms ranging from various degrees of abdominal distention, discomfort, dyspepsia, and pain. A study group from Japan used functional magnetic resonance imaging (fMRI) to investigate the cerebral cortical response to biliary stimulation in human. The study suggests the possibility to detect hypersensitive conditions in functional biliary disorder using fMRI.

The cortical response to esophageal, stomach or rectal stimulation has been studied using several different modalities including evoked potentials, functional magnetic resonance imaging (fMRI), and positron emission tomography. However, there is no information concerning the cerebral cortical response to sensory signals that originate in the biliary tract in humans.

A research article to be published on April 14, 2010 in the World Journal of Gastroenterology addresses this question. The study group led by Jin Kan Sai, MD, Department of Gastroenterology, Juntendo University, Japan, used fMRI to investigate the cerebral cortical response to biliary stimulation in humans. Biliary balloon stimulation elicited activation of the insular cortex, prefrontal cortex, and somatosensory cortex.

The present findings are the first step in the evaluation of cerebral response to bile duct balloon distention, and show the possibility of the presence of pressure sensitive vagal afferents in the biliary tract and the cortical relay of these afferents beyond the brainstem.

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More information: Sai JK, Suyama M, Kubokawa Y, Matsumura Y, Inami K, Watanabe S, Kirino E. Identification of cerebral response to balloon distention of the bile duct. World J Gastroenterol 2010; 16(14): 1772-1775, www.wjgnet.com/1007-9327/full/v16/i14/1772.htm

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