

# Motion is Emotion : Why we should listen to Patient's Abdominal Symptoms

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As depicted in the film 'PIKU'<sup>#</sup>, the preoccupation with constipation and Amitabh Bachchan\* says 'motion is emotion'. This epitomizes the feeling and emotions of a large number of our patients particularly in this part of the world who blame everything on "gas" and its movement upwards. This is generally accepted with derision by most of the professionals and is a butt of joke in inner circle. Sometimes, patient's insistence on dietary advice is scoffed at. The research is providing astonishing answers.

## 'BRAIN IN THE GUT'

The nervous system controlling digestion (ENS : Enteric Nervous System) is dubbed as second brain. It comprises of 900 million neurons, supportive glial cells, produces 40 Neurotransmitters 50% of Dopamine and 95% of the Serotonin and its own blood brain barrier and is 5 meter long stretching from esophagus to anus. Normally it is believed that neuro-transmitters produced in the gut may not reach brain but it may reach the areas where blood brain barrier is deficient like hypothalamus.

We all are aware that stress leads to search of comfort foods and eating of high carbohydrate and fatty foods lead to feeling of pleasure. Ghrelin is a hormone secreted by gut which makes us hungry and it also releases Dopamine in brain and acts on reward system. Butterflies in stomach and Gut instinct are well known phenomenon.

Recent studies show that a gut flora is responsible for formation of fully functional Blood Brain Barrier in mice.<sup>1</sup> Early experiments aiming at identifying presumed homeostatic, sleep-inducing factors by continuous sleep deprivation experiments in animals or humans led to the identification of bacterial endotoxins, i.e. decay of bacterial cell walls, as a major accumulating molecular component during prolonged wakefulness in cerebrospinal fluid and urine.<sup>2,3</sup> This led to the idea that a wakefulness-dependent increase in the permeability of the BBB is cyclically restored during sleep, and that this process is regulated by gut microbiota, their decay or elicited downstream responses<sup>4</sup>. Such a clearance and containment function of sleep against gut microbiota and their elicited responses would be in line with the recent discovery of a clearance function of sleep for endogenous neurotoxins like aggregated Abeta.<sup>5</sup>

In recent studies gut microbial flora has been found to influence autism, depression and anxiety. Similar changes have been found in gut neurons as in Parkinson's disease and Alzheimer's disease. Mouse model with some features of autism had much lower levels of a common gut bacterium called *Bacteroides fragilis* than did normal mice. The animals were also stressed, antisocial and had gastrointestinal symptoms often seen in autism. Feeding *B. fragilis* to the mice reversed the symptoms.<sup>6</sup>

There are bidirectional communication channels between the gut microbiome, the gut, and the brain. Endocrine, neurocrine and inflammation-related signals generated by the gut microbiota and specialized cells within the gut can, in principal, affect the brain. In turn, the brain can influence microbial composition and function via endocrine and neural mechanism.<sup>7</sup>

These findings suggest increased influence of gut on brain and also influence of emotions and brain on gastroenterological symptoms. We should start paying more interest to patient's account of their gut symptoms and dietary modification and antibiotic may form a modality of treatment in future.

# Indian comedy-drama film directed by Shoojit Sircar.

\*Amitabh Harivansh Bachchan (IPA : born - 11 October 1942) is an Indian film actor.

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