



THE GUT BRAIN CONNECTION

Have you heard about having a gut feeling? Funny how your body tells you about impending danger or concern and we refer to it as a gut feeling because we feel it in our guts or abdomen. We also refer to a "pain in the gut" as being something that causes us a problem, stress or concern. Where do these terms come from? We have all had the experience of "butterflies in our tummies", which is a direct influence of the brain on the gut. In this case it is when we are nervous or stressed.

I became interested in this topic because of the effect that my patients' environments had on their gut function and gut symptoms but also on observing the effect that improving diet in my patients seemed to solve a large number of their other health problems, in addition to their gut problems.

You see, people who get an irritable bowel, which is the commonest condition in the world affecting up to 20% of people, suffer from wind, bloating, abdominal pain, diarrhoea, burping and farting. We know that this condition is influenced by emotions, stress, diet and other factors. Irritable bowel syndrome also seems to come along with other problems such as premenstrual syndrome, migraine, fatigue, anxiety and depression.

When I had a closer look at the connections between the gut and the brain, I realised that it was far more complex than anyone could imagine! You see, there are numerous centres in the brain that communicate through the spinal cord and through the somatic nerves – these are the nerves that move our muscles. Some of these nerves also go to the gut. In addition, there is the autonomic nervous system (called automatic because it does things for you that you don't have to think about, like breathing) that can affect the bowel automatically when there are sensations coming from the brain. These automatic affects can be to calm the bowel down or to stimulate it.

Then when you get down to the bowel itself, we are talking about the cells lining the bowel wall, which are only one cell thick, the chemicals put out by some of the bowel cells, and the bacteria that are lining the bowel.

The enteric nervous system is the web of nerves that actually move the bowel wall along. This, and the other parts of the nervous system just mentioned above, have complex interactions and parallel relationships.

One of the ways that stress can affect the bowel is when the primitive brain stimulates the hypothalamus in the primitive brain and releases a messenger called CRF (corticotrophin releasing factor) which then causes further messengers down the line to stimulate the pituitary and adrenal glands. This reaction is part of the flight or fight response that the primitive animal needs to get out of a near death/survival experience.

Then we look at the bowel cells themselves. You need to eat the right food so that these cells can survive and make things like B vitamins for the body. Some of the bowel cells release hormones such as serotonin – 95% of our serotonin comes from the bowel as long as the bowel bacteria are balanced. If they are not we don't get as much serotonin, the happy chemical. There are other messengers secreted from some of these bowel cells that make us feel better or feel worse. Some of these messengers are in response to something that we have eaten that our body does not want and can cause the brain to feel nausea or cause vomiting.

And then finally, we have the thousands upon billions of bacteria that are situated within the lining of the bowel. In more recent times when the human DNA project was completed, it was found that there are 20,000 human genes in the human body. In addition, there are a million bacterial genes in the human body! Every living cell in our body contains energy factories called mitochondria – these are actually primitive bacteria. So we cannot even make our own energy by ourselves. We co-evolved with bacteria from the very beginning.

It has been found that the balance of these bacteria are influenced by sensations coming into our systems and then being sent to the bowel. For example, we know that stress causes reduction in stomach movement and gastric acid, as well as a change in the movement of the bowel itself. Stress also causes an imbalance of the bowel bacteria balance.

So how can we help our gut brain connection and stay healthy at the same time?

I found it intriguing that when I corrected my patients' diets, they told me that within two weeks or so, problems like body pain, anxiety, negative thoughts, depression, irritable bowel, migraine and other health problems got better. So fundamentally, the diet is very important to these multitude of little critters in our bowels and we must keep them happy. Depending on your health situation, the ideal diet may well be a modified Mediterranean diet or even the Palaeolithic diet. We know that in countries such as China where they have adopted the western diet more and more, obesity and diabetes has increased. There are signals from bowel cells to the brain that increase eating and reduce satiety. Eating the wrong foods can cause this to happen.

A lot of research done with probiotics has shown that problems such as stress, anxiety, bowel health and bowel conditions, have all improved. There may well be a case for taking probiotics after eating badly or when being stressed. Many of these studies have been performed on rats, mice and apes. Very few studies are coming forward now with humans but a recent study suggested that in women, supplementing probiotics reduced anxiety.

So in the end we have to keep these little critters happy to keep the bowel flora balanced so that it does not affect our general health and cause diseases. On the other hand, we also have to think about the way we think and think about how we tackle stress so that we don't allow that to affect the rest of our bodies and our bowels.