

VISCERAL PERCEPTION

Food and hypersensitivity in functional dyspepsia

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It has long been known that stress affects both the stomach and colon, as shown by the very high prevalence of gastrointestinal symptoms among patients with psychiatric illness. The source may be limbic or peripheral, involving encoded memories or physiological changes. It is important to realise that physical symptoms such as those of functional dyspepsia do not only mean that the patient has a stomach disorder which needs to be identified and treated with specific pharmacological remedies, they often represent, in metaphorical and symbolic form, a state of disharmony brought about by a specific psychosocial situation. It is only when that situation is understood and acknowledged that the patient can begin to get better.

many, digestion of a meal is a good experience that is associated with feelings of satisfaction, relaxation, comfort, and well being. It is truly said that a family that eats together stays together. Or the way to a man's (or a woman's) heart is through his (her) stomach. Eating together induces feelings of peace and friendship, which encourage communication and collaboration. But how different it is for those unfortunate people who suffer with functional dyspepsia. They are so tortured with indigestion, bloating, pain, or heartburn that every meal is a torment that causes anxiety and frustration, and results in social exclusion and isolation. It is as if the stomach is revolting against the very idea of food and just wants to get rid of it or at least take in as little as possible.

Physiological studies of gastroduodenal motility reflect this state of confusion. Instead of the food emptying from the stomach in a calm regulated manner driven by steady peristaltic waves that sweep down from the incisura through the pylorus to be continued by clusters of contractions in the duodenum, gastric emptying is frequently delayed. The delay is associated with lack of fundal compliance, disturbed duodenal contractility with more retroperistalsis and duodenogastric reflux, an abnormal distribution of food, and an abnormal antral dilatation. All of these are physiological features of nausea. Thus it appears that although the stomach is in the process of trying to digest food, it has adopted the posture for vomiting. It is "totally confused" not knowing whether it wants to digest the meal or throw it up.

I have a group of patients who live with this sort of gastric revolt every day of their lives. Things are so difficult that it takes an age to get enough food down to keep them alive. Take Sally for example. She cannot eat with the rest of her family. If she tries, she has difficulty in swallowing, her mouth goes dry, and the food seems to get stuck half way down. If it gets as far as the stomach, she gets such severe abdominal cramping and nausea that it can often come straight back again. The only way Sally can take enough food in is to eat in the early hours of the morning when everybody else is asleep. Even then she has to eat very slowly, averting her gaze from what she is eating, and reading a book to distract herself. Sally has a seriously ambivalent oesophagus and stomach. Thus clearly the way we understand functional gastrointestinal disorders does not have to be limited by the Rome II declarations.¹

SUMMARY

It has long been known that stress affects both the stomach and colon. This has been shown by brain imaging techniques, and by the very high prevalence of gastrointestinal symptoms among patients with psychiatric illness. The source may be limbic or peripheral, involving encoded memories or physiological changes. Unpublished data from more than 700 in depth psychoanalytical interviews with patients with various functional gastrointestinal disorders suggest that there is a subgroup of patients with irritable bowel syndrome (IBS) and functional dyspepsia that have difficulty in expressing emotion. In these individuals, the outworking of painful memories is realised by the recruitment of heightened visceral sensation and symptoms. These patients typically present with complex psychological and gastrointestinal symptomatology that impairs their quality of life. They constitute a subgroup that is clearly very different from those with functional disorders who complain of a single symptom without associated emotional problems. These observations highlight the need to recognise that physical symptoms such as those of dyspepsia do not just mean that a patient has a stomach disorder that needs to be diagnosed and treated with specific pharmacological remedies. Instead, we should embrace the idea that presenting symptoms often represent, in metaphorical and symbolic form, a state of disharmony brought about by a specific psychosocial situation, and it is only when that situation is understood and acknowledged that the patient can begin to get better.

INTRODUCTION: A REVOLT IN THE GUT

It is often useful to envisage functional dyspepsia as the confused and tormented stomach. For

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Abbreviations: CCK, cholecystokinin; IBS, irritable bowel syndrome.

PHYSIOLOGICAL STUDIES OF NUTRIENT SPECIFIC GASTRIC HYPERSENSITIVITY

Several studies have shown that the stomach is more sensitive to distension in those with functional dyspepsia than in healthy subjects,² suggesting that, in common with the overlapping syndrome of irritable bowel syndrome (IBS), functional dyspepsia may be a disturbance of visceral sensation. But this is not the whole story. Patients with symptoms of functional dyspepsia often report that meals, which are rich in fat, are particularly likely to cause them discomfort. This phenomenon has been investigated in our laboratory.³ These studies specifically tested the hypothesis that the presence of lipid in the small intestine makes the dyspeptic stomach more sensitive to distension.

Ten patients with functional dyspepsia and 10 healthy control subjects were studied on two occasions separated by at least seven days. On the morning of the study, after an overnight fast, a single lumen polyvinyl tube equipped with a side opening near the weighted tip was introduced through the nose and positioned in the duodenum under fluoroscopy. When this was in place, each subject swallowed a flexible double lumen polyvinyl tube that had an ultrathin polythene bag with a maximum capacity of 1.2 litres wrapped around its distal end. This was used to distend the stomach and record gastric pressure.

Each experiment lasted 2.5 hours and was performed with subjects lying in a 30° semirecumbent position. Normal saline was infused into the duodenum at a rate of 1 ml/min for just over an hour. This was followed either by an infusion of Intralipid (Kabivitrum) at the same rate (delivering 1 kCal/min) or a second control infusion of saline. Subjects were unaware of the nature of the infusion. After each infusion had been running for 30 minutes, three ramp distensions of the gastric bag (100 ml/min) were carried out and subjects were asked to report when they first felt fullness and when the distension became uncomfortable, whereupon the distension was stopped.

Sensations of fullness and discomfort occurred at lower intragastric volumes and pressures in patients with functional dyspepsia, confirming earlier data reporting gastric hypersensitivity. Intraduodenal lipid infusion increased gastric compliance in both the patient and control groups, reducing the pressures recorded per unit increase in volume, but data on gastric sensitivity differed in the two groups. In healthy controls, lipid infusion increased the volume required to induce fullness and discomfort while in the dyspeptic group the thresholds decreased. Thus while the presence of lipid in the duodenum reduced sensitivity to distension in healthy controls, it made the dyspeptic stomach more sensitive. Subsequent studies conducted on a further nine patients with dyspepsia showed that this effect was nutrient specific.⁴ Although isocaloric infusion of glucose into the duodenum increased gastric compliance, it also tended to reduce gastric mechanosensitivity. Sensitisation was therefore specific to lipids, supporting the contention that fatty meals are more likely to exacerbate symptoms in patients with dyspepsia.

These results suggest that the sensitisation of the stomach might be related to increased secretion of/or sensitisation to cholecystokinin (CCK) by lipid infusion but the data are not entirely clear on this point. One recent study has shown that CCK levels during duodenal lipid infusion were no different between dyspeptic patients and healthy controls.⁵ Although hypersensitivity to intravenous infusions of CCK have been reported in dyspeptic patients, blockade of CCK-A receptors with dexloxiglumide did not abolish dyspeptic symptoms even though it inhibited gastric relaxation. So it would seem that CCK is only one of several factors involved in this process.

EMOTIONAL AMBIVALENCE AND GASTRIC CONFUSION

In order to understand the problem further, we have to understand the patient. During the last seven years, I have

conducted over 700 in depth psychoanalytical interviews with patients with various functional gastrointestinal disorders. This experience, by its very nature highly subjective, strongly suggests that functional dyspepsia is a state of emotional ambivalence represented by digestive conflict. So what does this mean in physiological terms?

In healthy subjects the presence of lipids in the duodenum induces comfortable sensations of satisfaction or fullness, similar to those experienced after a meal. It also causes feelings of well being, relaxation, friendliness, tranquillity, and drowsiness.⁶ In animals, the same experiment induces a grooming sequence followed by sleep. Dimasio has recently suggested that what we understand by emotion actually comes from our feelings, as conveyed to the brain via visceral afferent nerves.⁷ These experiments would support that idea.

Supposing however that the act of eating a meal is associated with anxiety or tension. This would interrupt the peaceful reverie of digestion by stimulating the sympathetic nervous system which in turn would inhibit peristalsis, reduce the output of digestive secretions, and increase visceral sensitivity. Previous studies have shown that excitation of the sympathetic nervous system by experimental stressors,⁸ peripheral venous pooling,⁹ and focused attention¹⁰ increase visceral sensitivity while relaxation and distraction reduces it. It is also known to us all that if we do not give ourselves enough time to eat a meal, or we try to eat while we are emotionally upset, we are likely to get indigestion. Emotional tension while we are eating induces a physiological state of digestive conflict; the vagus is trying to facilitate peaceful digestion while the sympathetic nervous system is trying to alert the organism to action. The result is that the person feels anxious and tense and suffers with indigestion or dyspepsia.

In order to understand dyspepsia and help the patient overcome the disorder, we need to understand the source of the meal related tension. We need to know what the symptoms represent; what they mean to the individual. Patients often describe their symptoms in emotional terms, which provide important cues as to what is going on: "I feel so empty"; "it's just eating me up"; "I just can't stomach it", or "it makes me sick". There seems therefore to be a very strong connection between dyspeptic symptoms and unresolved emotional tension.

DIGESTION: A METAPHOR FOR EATING

As emotions are generated in the context of relationships, and eating is an activity that helps to consolidate relationships, we were interested to investigate the extent to which digestion might be thought of as a metaphor for relating. Semistructured interviews were conducted on 22 patients who had digestive problems in relation to food, focusing on the history of their difficulty in eating and how they described their relationship with food.¹¹ These interviews were subjected to a qualitative analysis, which was conducted by a different investigator. Several common themes emerged. These were: "I am afraid my food is contaminated"; "eating bland foods makes me feel in control"; "I feel an emptiness inside that eating does not satisfy"; "I cannot feed other people"; "I like food, but it doesn't like me"; "I eat to comfort myself and then feel guilty"; and "I cannot cook for myself". Comparison of these themes with the themes identified from the previously mentioned independent psychoanalytical assessment interviews revealed a remarkable degree of correspondence. Issues of distrust, chaos, control, isolation, inability to relate to others, guilt, and inability to look after oneself, that were prominent in the context of social relationships, were associated with similar issues expressed in the context of the relationship with food.

Over half of the cohort studies (13 of 22) also reported difficulties with eating in childhood. Nine reported that meal times were always tense; nine said they hated milk (mother's

food) but four said that milk made them feel good; two reported that their mother had had difficulty in feeding them, and five said that they were forced to eat their meals. So it appeared that in over half of the patients, serious conflicts around food and mealtimes had led to a state of tension around meals that may well have contributed to their indigestion. For example:

Tanya is tall with raven black hair, laughing eyes, and a ready smile. She teaches drama at a further education college and seems to be a young woman who likes to enjoy life. Appearances can be deceptive. Tanya was referred for consultation with a strange constellation of symptoms; burning stomach, sore throat, sore eyes, and hot head, hands, and feet. They reminded her of the feelings she would have if she had drunk too much. She has what she described as a double relationship with food. She enjoys eating but it can bring on her symptoms. "I like food but it doesn't like me." An exotic exciting new experience with food is always associated with symptoms. She therefore avoids the food she likes because this would tend to leave her feeling anxious, guilty, and out of control. Instead, she tries to control her symptoms and calm her anxiety by eating sensible foods, such as scrambled eggs, soup, custard, milk, toast, baby foods, and salads. These foods are not only used to control symptoms but also seem to calm her down.

When she was a teenager living at home, Tanya felt that she had to be the peacemaker, mediating between her extrovert father and her mother who was "silent and deadly". As she grew up and left home both polarities were represented in her own personality. She likes to enjoy herself, go out clubbing, eat good food, drink too much, have fun, but if she ever gives free rein to this aspect of her personality, she pays for it afterwards by feeling awful. She then stays at home for weeks, avoids contact with people, eats sensible foods, and watches television. So she oscillates between hedonism and isolated control. Tanya has never really been able to establish a long term relationship with a partner and feels depressed that she has missed out.

So it appears that the way a person is with food can represent how they feel and how they are with other people. People who are careful about what they eat are careful people. Those who suffer from eating food can find relationships and other aspects of life difficult. Some people have been intolerant of food for as long as they can remember. In others, food intolerance has been triggered by a specific event that may be associated with food.

IBS can be provoked by an attack of food poisoning but not everybody who has food poisoning develops long term symptoms of IBS. Most patients recover without any long term effects but 20–30% of those who have been hospitalised with gastroenteritis suffer bowel symptoms which continue for months or even years after the original infection has cleared up. This is much more likely to occur if the original attack of food poisoning is associated with emotional upset.¹² In these individuals the experience of food intolerance can set up psychological associations that can prove very resistant to treatment. The same can apply to dyspeptic symptoms. For example:

Amanda was so in love with Rick that she chose to ignore how late he was coming home and the increasing number of nights he had to spend out of town. Times were tough for both of them and she knew that Rick was taking on extra jobs so that they could get married and start a family. So when Rick suggested that they go out for a meal because there was something he had to say to her, she felt thrilled and excited. The venue was perfect; a little fish restaurant in a village a few miles away. She thought she would wear the little black dress that Rick liked—and just for good luck she put a dab of that expensive perfume he had bought her that first amazing Christmas together on the side of her neck just below her ears. Rick was attentive as usual but seemed somehow tense and sad. They chose the "supreme of salmon with prawns and Hollandaise sauce", and a lovely bottle of Semillon Chardonnay. There was something not quite right with the sauce but Amanda felt so relaxed and happy that she ignored it. She had just finished hers when he told her that he had been having an affair with

Margaret, who worked in the office. It had been going on for some time. He still loved her but he loved Margaret too, and well—somehow she had got pregnant. Amanda listened with mounting horror and dread. How could this be happening? Suddenly she couldn't sit there any more. She rushed through the restaurant to the "ladies" where she was seized with the most violent spasms of retching. She didn't stop vomiting for three days. Every time she even thought of food she would be sick. That was three years ago. Rick married Margaret but she lost the baby. Amanda took a job in another town. She has been out a few times with other men but always feels sick and often makes excuses not to go out. Subsequent to the attack of gastroenteritis on that fateful evening, she has developed an "allergy" to fish. Even the smell of fish makes her violently ill. Other foods seem to upset her as well. She has lost a lot of weight. Her family is really worried.

Amanda's gut reaction combined with the catastrophic news had been so dramatic that anything that reminded her of that evening made her feel sick. If she had been able to talk about what happened, the emotion would have worn away, and any food intolerance would have dissipated with it, but she was too ashamed and didn't tell anybody, not even her family. So the emotional reaction established a memory loop, which could be activated by any association with that fateful meal. The same sort of mind-gut connection has been conditioned in animals who were made allergic to milk protein.¹³ Whenever milk protein was injected into the gut, a bell was sounded and the rats all developed diarrhoea. After a few trials, just ringing the bell alone was enough to induce the diarrhoea. The animals had associated ringing the bell with a gut reaction and reacted to the bell alone. Other experiments carried out in the 1950s showed that patients with severe milk intolerance only developed symptoms if they were told that milk was injected into the stomach irrespective of whether that was true or not.¹⁴ In other words, it was the idea that reproduced the symptoms and not the food itself.

CONCLUSIONS

Two hundred years ago Dr Caleb Parry, physician to the fashionable Georgian spa city of Bath and one of the first people to describe the symptoms of thyrotoxicosis, is reputed to have said, "it is much more important to know what sort of patient has the disease than to know what sort of disease the patient has".

Somehow, in its frenetic quest for scientific evidence, orthodox medicine appears to have forgotten that. This probably explains why an ever increasing number of patients with functional gastrointestinal disorders are seeking help from complementary and alternative practitioners, or treating themselves with nutritional supplements and herbal remedies. It is important to realise that physical symptoms such as those of functional dyspepsia do not only mean that the patient has a stomach disorder which needs to be identified and treated with specific pharmacological remedies, they often represent, in metaphorical and symbolic form, a state of disharmony brought about by a specific psychosocial situation. It is only when that situation is understood and acknowledged that the patient can begin to get better.

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