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 a specific psychosocial situation. It is only when that situation is understood and acknowledged that the patient can begin to get better.

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 Unpublished data from more than 700 in depth psychoanalytical interviews with patients with various functional gastrointestinal disorders suggest that there is a subgroup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 its 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 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 is it 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. Things are so difficult that it takes an age to get enough food down to keep them alive.
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, 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. 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 controls 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. 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. Although hypersensitivity to intravenous infusions of CCK have been reported in dyspeptic patients, blockade of CCK-A receptors with dexloxioglude 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, tranquility, and drowsiness. 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. 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, peripheral venous pooling, and focused attention 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 physiologoical 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. 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.
around meals that may well have contributed to their indiges-
tion. 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 repre-
sent 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 intoler-
ance has been triggered by a specific event that may be associ-
ed with food.

IBS can be provoked by an attack of food poisoning but not
everybody who has food poisoning develops long term symp-
toms 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.” In these
individuals the experience of food intolerance can set up psy-
chological associations that can prove very resistant to

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