MANIPULATIVE TREATMENT OF INTESTINAL SPASM

BY

J. H. CYRIAX, M.B.

Spasm of the unstriated muscle of the alimentary tract is usually disregarded or considered impossible of treatment; not all patients with a mild or transient spasm of the intestine are troubled by it, but most of them have symptoms of some sort. Two types of spasm occur: sympatheticotonic, affecting the sphincters of the alimentary tract; and vagotonic, affecting the bowel itself. The resulting discomfort is due as much to an overstretching of that part of the intestine immediately proximal to the area of spasm as to increased tension in the individual spastic muscle fibres.

Sympatheticotonic Spasm

Sympatheticotonic spasm of the pylorus and the accompanying loss of tone in the gastric musculature cause dilatation and consequently slow emptying of the stomach. The stomach also contains too much air, so that pressure is exerted upwards on the heart and the base of the left lung, and downwards on the pelvic viscera. The analogy is clear regarding spasm of the cardia with dilatation of the oesophagus and spasm of the recto-colic sphincter with megacolon, both of which conditions are relieved by section of their sympathetic supply and aggravated by division of the vagal supply—that is, their sympatheticotonic nature is well established. As the masseur's finger cannot reach these sphincters, however, they are outside the scope of this article.

The symptoms of the syndrome of pyloric spasm vary widely in intensity; patients may be bedridden or only slightly inconvenienced. They complain of tenseness and protrusion of the abdomen, much gastric flatulence, inability to eat much or breathe deeply, nausea, heartburn (caused, in my opinion, by a normal, or even subnormal, strength of acid being retained in the stomach too long), epigastric discomfort after food, palpitation, giddiness, breathlessness on exertion, insomnia, sweating hands, and often constipation. Though the appetite, which is a function of the blood-sugar level, may be good, patients feel too full to eat more after only a few mouthfuls.

Gastritis and gastric ulcer are often associated with pyloric spasm; this, I think, is primary, and the retention of acid the first step towards gastritis and its sequels. Flatulence is the result of gastric contractions against a closed pylorus; as liquid does not leave at the pylorus, gas is forced past the cardiac sphincter. If the cardia is as spastic as the pylorus, however, the patient, try as he may, cannot bring up wind, though he knows the relief that would follow. Breathlessness, giddiness, and palpitation after meals or on exertion result, and are due to upward pressure embarrassing the action of the heart.

The signs of sympatheticotonic spasm are often slight in comparison with the disability present. The patient is usually pale and thin, and looks anxious. The epigastrium and left lower ribs are prominent; there is epigastric tenderness, and the spastic pylorus can be rolled under the fingers against the spine. Gastric splashing may be detected, and there is a tympanic note on percussion over a large area; the bowel sounds are infrequent and the pulse fast. Radiological examination shows delayed emptying and poor tone of the stomach, often with visceropexis, but nothing else.

Vagotonic Spasm

Vagotonic spasm may occur at any point from the duodenum to the rectum, where it is manifested by tenesmus. The common site is the colon ("colitis"), but the whole intestine, large and small, may be involved, or the spasm may be limited to only a few inches of bowel. The symptoms depend on the site and degree of the spasm, and the patients often feel surprisingly ill. Spasm of the distal part of the duodenum reproduces exactly the symptoms of duodenal ulcer, owing to the tension set up in the proximal segment. Spasm of the colon, if mild, causes colic and diarrhoea; if severe, colic and constipation, together with a feeling of tension within the abdomen. Spasm of the ascending colon is usually associated with dilatation of the caecum, and there is stiffness on full extension of the right thigh. Purges, by stimulating the colon to further contraction, make the constipation worse. If the rectum is involved there is difficulty and pain on defaecation. During menstruation, which is painful, vagal tone is generally increased and the abdominal symptoms are at their worst. Owing to its tight contraction a mechanical irritation of the mucous membrane of the colon is set up; mucus is secreted and voided, but apart from worrying the patient this fact is unimportant. Spasm of the jejunum and ileum is uncommon except as an extension of duodenal or colonic spasm, the symptoms of which predominate.

When the whole colon is involved the signs are obvious. The ascending and descending colon is palpable in each iliac fossa as a tender tube, the size of a thick pencil. The transverse colon lies high, and can be felt above the umbilicus on either side of the rectus muscle. The bowel sounds are frequent, the pulse usually slow. When the duodenum is spastic palpation may be difficult, but a skiagram will show the spasm and/or duodenal ileus—that is, dilatation and poor tone of that part of the duodenum proximal to the spastic area. Colonic spasm can be seen very clearly radiographically, and often a mild symptomless diverticulosis as well; this is the result of the high intracolonic pressure. Vagal tone is unaffected, but sympathetic tone is abolished, by spinal anaesthesia; at laparotomy the spastic coils that result are regularly observed. Spasm of the intestine, on the other hand, is relaxed by deep anaesthesia with ether or chloroform, so that surgeons are often sceptical of the frequency of its occurrence.

The cause of spasm of either type may be difficult to determine; in some cases no cause whatever is to be discovered. The two brief lists which follow include the more common causes, but are not exhaustive.

Causes of Sympatheticotonic Spasm

Toxaemia.—In the course of many diseases, particularly phthisis and febrile conditions, sympatheticotonic spasm is common, but its treatment is naturally that of the causative illness.

Reflex Spasm.—Cholelithiasis and chronic appendicitis—the latter often diagnosed but seldom present—both set up reflex pyloric spasm and its attendant symptoms, but are suitable for surgical rather than manipulative treatment. There is much discussion as to the true nature of "catarrhal" jaundice, but whether the abdominal symptoms are reflex, due to a duodenitis, due to spasm of the sphincter of Oddi, or part of an infective hepatitis, the fact remains that they are very amenable to manipulative treatment, which ensures proper relaxation of the pylorus and duodenum.

Pregnancy.—Early in pregnancy vomiting due to pyloric spasticity is common and responds well to manual treatment.

After Anaesthesia.—Particularly after laparotomy under a general anaesthetic pyloric spasm and gross dilatation of the stomach may result and cause persistent vomiting and pain due to tension on the wound. If a patient already the subject of spasm of the pylorus is subjected to an abdominal operation it is important that he should receive manipulative treatment from the first, especially if a spinal anaesthetic is not given.

Psychogenic Spasm.—It is essential to realize that in this large group of patients the symptoms are by no means imaginary. Their sensations correspond to definite visceral disturbances caused by impulses carried in the sympathetic system as the result of emotional stress, usually anxiety, prolonged dissatisfaction, or over-tiredness. That this sympathetic mechanism will be called into play is particularly likely in sensitive and intelligent people who feel deeply but are too controlled to give their emotions free play; hence these are repressed into seeking a visceral outlet. Emotion in mammals other than man leads to combat or flight, the preparation for which is brought about by a high sympathetic tone that results in, among other things, cessation of gastro-intestinal activity. In man, unfortunately, this preparation for violent action is seldom useful, as the emotion is more often intellectual and lasting than physical and momentary. Even an improvement in the patient's circumstances does not necessarily result in the cure of spasm of psychogenic origin, because the derangement of visceral movement may have become a deeply ingrained habit. The good results claimed for such apparently different methods of treatment as psychotherapy and sympathectomy in, for example, achalasia of the cardia are seen to involve no contradiction; both result in an inhibition of sympathetic impulses to the sphincter. The method of re-education of the intestine described below offers a third approach to the problem; if the spastic point can be reached by the masseur's finger, relaxation can be obtained in spite of the continuance of an excessive sympathetic tone.

Causes of Vagotonic Spasm

Mechanical Irritation.—A high-roughage diet or the liquids used in colonic irrigation may set up colonic spasm. Purges irritate the intestine, and since constipation is common are often persevered with, in spite of their failure to help. Occasionally diseases of the colon, such as dysentery, may after cure leave a colon liable to spasm.

Pregnancy.—Especially during the second half of pregnancy spasm of the colon is apt to occur. Many cases of hyperemesis gravidarum fall under this heading. In one patient a spastic loop had even forced its way between the uterus and the anterior abdominal wall, whence repeated reposition was necessary.

Allergy.—Attacks of violent diarrhoea followed by colic and constipation, with even prostration and syncope, occur in those sensitive to certain foods. The treatment is, of course, identification of the food responsible and its avoidance.

Hypocalcaemia.—This promotes a high vagal tone as well as increasing the excitability of the intestinal muscle. I have come across the condition only twice. The patients had blood calcium levels of 7.0 and 8.9 mg. per 100 c.cm. of blood respectively, with inorganic phosphorus blood levels of 5.3 and 3.2 mg. Injections of vitamin D raised the calcium figure to 12.3 and 12.2 mg., while that for phosphorus fell to 2.7 and 2.9 mg. In spite of this satisfactory change there was only improvement and no cure of the intestinal condition in each patient. Manipulative treatment afforded one of them great relief, but it has to be continued at fortnightly intervals; the other patient obtained full relief that has now lasted for six months.

Psychogenic Spasm.—Whereas anxiety tends to increase sympathetic tone, prolonged mild excitement stimulates the vagus. A large group of patients whose vagotonic spasm originates in this way includes those in executive positions with important decisions to make, engaged couples, and creative artists, all of whose preoccupations are to some extent pleasurable. Obviously, some problems will cause excitement in one person and anxiety in another.

Differential Diagnosis

By the time patients are prepared to try manipulative abdominal treatment they have usually been exhaustively investigated already. The length of history as a rule excludes a diagnosis of growth or early phthisis. There may be persistent discomfort and tenderness in the right hypochondrium, with flatulent indigestion suggesting cholelithiasis, and yet a normal radiological filling and emptying of the gall-bladder. In these cases spasm of the duodenum or of the colon near the hepatic flexure may be responsible. Spasm of the ascending colon is so often diagnosed as inflammation of the appendix that this has usually been removed. Appendectomy, followed by a return of the symptoms, possibly attributed to adhesions, suggests that the condition was ascending colonic spasm from the first. As appendicitis is accompanied by diminution of bowel movement in its neighbourhood, and spasm by excessive movement, auscultation for bowel sounds often points towards the correct diagnosis. There is, of course, no rise of temperature or pulse rate in spasm of the colon, but there may be constipation, and tenderness in the right—and often also the left—iliac fossa. Peptic ulcer is excluded by radiography in cases of pyloric or duodenal spasm, but, as an adjuvant measure, manipulative methods are not necessarily contraindicated in gastric ulcer, which can only benefit from relaxation of the pylorus. Achlorhydric diarrhoea and lead poisoning must be kept in mind. Heart disease is often suspected in the syndrome of pyloric spasm, and some cases of "effort syndrome" fall into this category. In constipation due to otherwise symptomless hypothyroidism, the lack of spasm, the slow pulse, and the silence on auscultation for bowel sounds give the clue to the correct diagnosis.

General Treatment

Whatever treatment is adopted it is essential to explain to the patient the way in which his symptoms arise. The idea that some part of the intestine, palpable by the physician and identified to the patient by the tenderness elicited, suffers a persistent contraction is well within the patient's grasp. Mistaken ideas to which the patient adheres firmly must be disposed of. They are: first, that his troubles are due to some unidentified foodstuff disagreeing with him; second, that for good health the bowels must be made to open at least once a day. A brief review of the ups and downs reported in the history quickly corrects the first fallacy, and the patient can be told that within reason it does not matter how seldom his bowels open so long as he does not take a purge. Manipulative treatment usually does result in a daily motion, but patients with severe colonic spasm often feel at their best when the bowels open only every other day.

The patients I see are those whom medicines and diets have failed to benefit, so that my opinions on the following points may be biased. Patients with a resting pulse rate of under 60, excessive salivation, and intestinal spasm are often helped by atropine, but colonic spasm alone appears not to benefit. To give atropine for pyloric spasm is illogical and useless; for this the correct drug theoretically is ergotoxine (not ergometrine), but I have not found any good effect follow its administration. My experience of papaverine has been disappointing; alkalis and bromides have, of course, already been given to most of these patients. For vaccines I can see no justification, and I have never tried Irish moss or bran. Calcium, by diminishing cellular excitability and increasing sympathetic tone, is a useful drug in vagotonia; its opposite, potassium, which

should in theory be useful for sympathicotonia, I have not tried. Because of the patient's insistence that his present food disagrees with him, various diets will usually have been tried, and it is well to outline one consisting of foods that provide much nourishment in little bulk. Lying on the right side after meals and belts to raise the abdominal contents are not much use because it is not the position of the hollow viscera that matters but their tone.

Manipulative Treatment

Manipulative treatment is not the treatment of choice, as it requires daily attendance for perhaps some weeks, but it is the only treatment left untried by most of my patients. The fact that the patient has already had massage to the abdomen without relief is no bar to the method described below, which differs fundamentally from that used by masseurs. They are taught to massage the anterior abdominal wall and to try to push onwards the contents of the bowel, whereas the aim of the treatment outlined here is to relax the intestinal spasm so that no obstacle remains to hinder passage along the bowel. Before treatment begins all medicines must be stopped. If the patient has taken a purge regularly this may—but surprisingly often does not—result in the bowels not being opened for three or four days, but, after this, evacuation gradually becomes regular. The patient can be told that constipation is perfectly harmless so long as no attempt is made to treat it. In any case he is encouraged not to give in by the fact that the expected results of constipation—for example, headache and malaise—seldom appear under daily treatment.

The basic principle of all deep massage is not to allow movement between the patient's skin and the masseur's finger. Nowhere is this principle better illustrated than in massage of the intestine through the whole thickness of the anterior abdominal wall. The masseur's finger and the abdominal parietes must move as one, so that the intestine is directly affected. The patient adopts a half-lying position, relaxes his abdominal wall as best he can, and the spastic parts are identified. To begin with, the utmost gentleness may be necessary, since as soon as pain is evoked the muscles tense and treatment becomes impossible. With the hand and forearm horizontal, vibrations are transmitted to the intestine with the pads of the fingers. In patients who do well quickly the spasm may be felt and heard to relax after, say, fifteen minutes' vibratory treatment; in obstinate cases this desirable result may be achieved only after several weeks. From day to day the spastic point becomes less easy to palpate. Towards the end of the half-hour treatment, when the pylorus is relaxing, the stomach must be squeezed, so as to encourage its overstretched musculature to contract and expel some of its contents. The masseur stands facing the patient's feet, and bends forwards with the left hand on the patient's left lower ribs and the right indenting the mid-abdomen. The stomach is compressed between the masseur's two hands moving synchronously, the left hand medially, the right hand upwards. (In gastric ulcer, of course, this part of the treatment is omitted.) In spasm of the colon the same attempt is made in the right iliac fossa to diminish the size of the caecum. Finally, spinal nerve frictions are given; in sympathicotonic spasm, only to the sacrum where they cause reflex excitation of the sacral parasympathetic nerves; in vagotonic spasm in the mid-thoracic to mid-lumbar region, to stimulate the sympathetic.

If the perineum is lax active exercise of the levator ani muscle can restore its tone, even years after childbirth.

In "catarrhal" jaundice the treatment is the same as for a spastic pylorus, except that the duodenum must also receive treatment; the abdominal symptoms are usually fully relieved and the duration of pale stools reduced to a few days. The resting pulse rate gives a good indication of the patient's progress in cases of dilatation of the stomach; the rate falls from over 80 to under 70 when taken under standard conditions. A small increase in weight is common on improvement from sympathicotonia. The patients are treated daily until they are much better, whereupon the interval between treatments is increased. When the patient remains well on a weekly treatment he can be discharged. Relapses are rare, and one or two prompt visits suffice to stop them. Dysmenorrhoea is often greatly benefited for no very obvious reason. Patients whom years of ill-health have dispirited must be encouraged to take up curtailed activities again, so that they are leading approximately normal lives by the time that treatment ceases. Of the last fifty patients treated by me forty-three have remained well for a year or more after discharge.

Conclusion

Great improvement, even cure, of long-standing abdominal trouble can be achieved by manual treatment to the gastro-intestinal tract; vibrations to relax the spasm, manipulation to contract the proximal viscus, and the appropriate spinal nerve frictions. Fortunately, gut that has been educated to ignore the impulses that are upsetting its function stays unresponsive; hence relief is usually permanent. The treatment, as outlined here, is expressed in its simplest terms, and experience suggests many variations in technique, but the fundamental fact that manual vibrations relax intestinal spasm does not alter. Daily practice for months is necessary for proficiency, but even when given imperfectly the treatment achieves its effect, albeit more slowly. There must be a large group of patients who would benefit from manipulative treatment of their gastro-intestinal tract, but whose medical advisers are but dimly aware of this method's possibilities, even existence. Nevertheless, there is nothing unreasonable about it, and now that surgical manipulation is so well established it is to be hoped that the profession will not arbitrarily reject the idea of medical manipulation.

G. B. Costa-Starico and M. Miglietta (*Arch. ital. Chir.*, 1937, **47**, 3, 281) state that the beneficial effect of maggots on suppurating wounds was observed by Ambroise Paré during the war in Flanders in the sixteenth century, and later by Larrey in the Napoleonic campaign in Syria. The American surgeon W. S. Baer, however, (*J. Bone Jt. Surg.*, July, 1931) was the first to make scientific use of the method of applying blowfly larvae in chronic osteomyelitis, having noticed in the great war that neglected wounds swarming with larvae healed with surprising rapidity. He therefore applied the larvae in eighty-nine cases of chronic osteomyelitis with gratifying results, which were confirmed by subsequent observers, including the present writers, who record six illustrative cases in patients aged from 4 to 29, and come to the following conclusions. The larvae of flies constitute a valuable addition to the surgical treatment of chronic osteomyelitis. In dissolving the necrotic tissue by their ferments and absorbing it the larvae facilitate the discharge of small sequestra embedded in unhealthy granulation tissue. The method moreover cleans up the wound and accelerates the process of recovery, this action probably being due to mechanical irritation. Lastly, it favours the production of a good smooth and solid cicatrix which does not contract or interfere with proper functioning of the limb.