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THE SYMPTOMS OF HIATUS HERNIA

BY

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The symptoms of hiatus hernia are very varied and are often mistaken for those of other diseases. This led Harrington (1948) to refer to the condition as the "masquerader of the abdomen." The object of the present study is to analyse the symptoms in a series of patients with hiatus hernia. Particular attention has been paid to the occurrence of pain resembling that of cardiac ischaemia.

Material

Between May, 1952, and October, 1954, at the Bristol Royal Infirmary, barium-meal examination (with the Trendelenburg manoeuvre) revealed a hiatus hernia in 70 patients, all of whom were re-examined. Sixteen of them also had another disease which could have caused their symptoms, and have therefore been excluded from this survey. The remaining 54 patients form the first group studied in this investigation.

The second group studied were seven private patients seen by Dr. D. H. Davies. They were originally sent to him because their symptoms had been attributed to heart disease. Hiatus hernia was the only abnormality found.

First Series

The series comprised 21 men and 33 women, whose ages ranged from 21 to 86 years. Forty patients were over 50 (Fig. 1). Forty-six of the patients had sliding herniae; six had paraoesophageal or rolling herniae, and two had paraoesophageal herniae with evidence of regurgitation into the oesophagus.

Symptoms (Fig. 2)

Pain was present in 32 cases (59%). In 28 it was situated in the epigastrium, and in two of these it radiated under the left costal margin. The remaining four felt it only in the left side between the left costal margin, left loin, and left scapula. It was nearly always nagging, gnawing, or described as a bloated feeling; its distribution was usually diffuse, but in several patients it was sharper, and was localized just beneath the xiphisternum. It bore no relation to meals in 17; in the remainder it occurred from a few minutes to two hours after meals, and in these patients fatty food was almost always an aggravating factor. Even where no other relation to food existed several patients said that the taking of fried food at the evening meal often caused distress during the night. The pain was relieved by antacids in nine. Three patients complained of pain when lying on the left side at night relieved by turning on

the right, and in one the reverse held true. Five had pain only in the evening when fatigued, and this was not thought to be due to the postural effect of sitting back in an easy chair.

Heartburn, a burning feeling starting in the epigastrium and spreading up through the chest sometimes as far as the throat, was a complaint of 40 patients (74%). It frequently preceded other symptoms by many years. In 12 patients it followed eating, in 15 no relationship to food existed, and 23 of the 40 patients stated that it woke them from sleep. Six of the women dated the onset of their trouble to heartburn in pregnancy. When severe, heartburn was associated with acid regurgitation into the mouth, but in 10 patients this never happened.

Acid regurgitation was a prominent symptom in 36 patients (67%), in six of whom there was no preceding heartburn.

Waterbrash, the sudden outpouring of mouthfuls of tasteless fluid, occurred in 13 (24%). Most commonly it preceded vomiting, but it sometimes followed heartburn. Two patients were woken by waterbrash at night.

Flatulence, usually postprandial, was a complaint of 38 patients (70%).

Vomiting was present in 31 of the series (57%). In 20 it followed eating; one complained of bouts of vomiting at

FIG. 2.—Incidence of main symptoms in 54 cases.

any time of the day, while another vomited without warning during the course of a meal. One patient had had to give up gardening as he was liable to vomit on bending forwards, and the remaining eight suffered from bouts of nocturnal vomiting, often of fairly large quantities. In most of the eight this was their presenting and most distressing symptom, and often there was no warning nausea. Three patients woke with nausea if they lay on the right side, but sitting up or turning on the left side relieved it and vomiting did not occur.

Symptoms were aggravated both on lying down and on bending forward, as to fasten a shoe in 24, while 10 could

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bend forward with impunity, distress being caused only on lying flat. In the remaining 8 the reverse was true. Symptoms thus provoked varied from patient to patient, but were usually heartburn (with or without acid regurgitation), vomiting, occasionally acid regurgitation alone, epigastric pain, or waterbrash. This relationship to posture was well marked in 42 (78%).

Dysphagia was present in nine patients (17%), in eight of whom food tended to stick momentarily behind the lower sternum before passing on; in two the sensation was accompanied by a feeling of slight burning in the throat. The remaining patient said that food burned all the way down but there was no actual difficulty in swallowing.

Appetite was almost always described as good or very good. Eighteen patients were gaining weight, a few were losing, often deliberately, and in the remainder the weight was constant. Sixteen of the men and 18 of the women were obese.

Palpitations and effort breathlessness were complaints of a few of the elderly obese patients, and were not attributed to the herniae.

Exertion itself never aggravated a patient's symptoms except when in the stooping position, as in gardening, where posture played a part.

Five patients (9%) gave a history of internal haemorrhage (melaena in three, haematemesis in two), and three others had intermittently blood-streaked mucus. Another five (9%) (two men, three women) had histories of anaemia, sometimes recurrent, which had responded to iron and for which there was no clear cause.

Relation to Trauma

Two patients gave a history of sudden onset following trauma.

Case 8.—A man of 44 had heartburn during the war years, aggravated by stooping. It was never severe, however, and had been absent for 10 years. One day a ladder was falling on him; he caught it with his arms over his head and broke its fall. Immediately he had a severe pain over the upper abdomen and lower chest which lasted several hours. He rested and by next day felt better. One month later the pain returned over the same site, but not so severely. It occurred most days and bore no relation to food, but was aggravated by lying down. A hiatus hernia was found on x-ray examination. Medical treatment did not relieve his symptoms, which disappeared after repair of the hernia a year later.

Case 34.—An obese woman of 55 described the onset in these words: "On Monday, May 9, 1952, at 11 a.m., I was stooping forward, lifting a bed, and I lifted my right foot to kick the carpet away, when I got the most intense gripping pain in the middle of my abdomen, spreading up to the lower part of my chest. I dropped the bed and fell to the floor, almost fainting. I wanted to vomit, so I crawled along to the lavatory, where I vomited all I had. I lay down for two hours, but the pain was not better and I was taken home by car. It got worse and worse, and I kept vomiting, and the following day was taken to the local hospital, where I lay for three days, getting no better. They were very worried about me and did not know what was the matter. On the Friday morning, four days after lifting the bed, I felt I wanted to stretch myself up for miles, and I gripped the overhanging pulley and pulled myself up. As I did so I felt as if something was dropping downwards from the upper abdomen, and it gurgled. Immediately I was relieved and the pain left the upper part of my stomach. I did it again a few minutes later, and it went completely and I was better. The vomiting stopped and I never looked back, but the upper part of my stomach was sore to the touch for months. I do not bend down any more, as I get the pain again, though of course nothing like so bad, and I sleep propped up, as I get it if I lie flat." She stoutly denied any trouble before May 9, 1952. X-ray examination showed a hiatus hernia.

Second Series

Since chest pain which might be confused with that of myocardial ischaemia was not a feature of any patient in the first series, a further group of seven patients with pain attributed to heart disease were studied. They had been referred privately to a cardiologist, but were subsequently shown to have a hiatus hernia.

Summaries of Histories

Case 1.—A woman of 63 was subject to heartburn and acid regurgitation, epigastric pain, and flatulence when lying on the right side at night. She also complained of wind behind the sternum spreading up into the neck and lower jaw and rarely to the left arm, which occurred on exertion and sometimes stopped her if she was walking quickly. It was relieved as soon as she had brought the wind up, and she said that it was "the wind that stopped me, not the pain." The symptoms varied greatly from day to day. A barium-meal examination showed a fairly large hiatus hernia; physical examination, heart screening, and the electrocardiogram were all normal.

Case 2.—A man of 48 had suffered from bouts of severe flatulence lasting several weeks every year since his early twenties. They were worse at night, and he was often woken at 2 a.m. with wind in the upper abdomen and "under the heart," which was always relieved by belching. Recently pain had spread to the left arm and, very rarely, to both arms, though this had occurred only in the daytime. The symptoms were never related to exertion, but were always aggravated by fatigue or worry. No evidence of organic heart disease was found. A hiatus hernia was revealed on barium-meal examination.

Case 3.—A woman of 70 who suffered from acid regurgitation at night had recently had attacks of pain in both wrists, spreading up the arms and across the shoulders. They occurred at any time of the day, though never at night, and bore no relation to exertion. A month before being seen she had had a choking feeling in the chest lasting 15 minutes. This had never recurred. Physical examination, electrocardiogram, and heart screening were normal. Hiatus hernia was found on barium-meal examination.

Case 4.—A woman of 68 complained of occasional heartburn when in bed, and heartburn and acid regurgitation on bending forwards after a meal. Three months previously, when out walking, she experienced pain in the mid-chest, which spread through to the back and into the left arm and forced her to stop momentarily with relief. She had never had it again, and felt now that she could walk a long way without any trouble. Two weeks before being seen a similar pain had woken her at night on several occasions and lasted about 10 minutes. It was relieved by sitting up. She had been given nitroglycerin tablets, and felt that they might have helped her a little. No abnormal signs were present on examination, and screening and electrocardiography were normal. A small hiatus hernia was shown on barium-meal examination.

Case 5.—A man of 67 complained of intermittent hot burning pain behind the mid-sternum of four years' duration. It occurred in bouts of a week's duration, the pain coming after eating and being aggravated by further swallowing: it always spread through to the back. Recently an attack of similar pain had woken him during the night. There was no relation to exertion. Physical examination revealed no abnormality. An electrocardiogram showed right bundle-branch block. Barium-meal examination revealed a small hiatus hernia.

Case 6.—A man of 58 was first seen in 1949, when he complained of slight effort breathlessness with occasional epigastric pain on effort; this also occurred half to three hours after food and was relieved by belching. About this time he had one severe attack of abdominal pain at night lasting several hours, and following this an investiga-

tion revealed a hiatus hernia. An ulcer diet relieved all his symptoms until 1952, when he again had two bouts of very severe abdominal pain in the xiphisternal region at night. No clinical, electrocardiographic, or radiological evidence of heart disease was found, and he had no further trouble after repair of the hernia.

Case 7.—A woman of 72 was referred with paroxysmal auricular fibrillation. She gave a history of typical cardiac effort pain 30 years previously due to anaemia associated with hiatus hernia. The anaemia had responded to iron treatment. She had had no pain since. Physical examination revealed signs at the left base thought to be due to a hiatus hernia; a barium-meal examination confirmed this, a large hernia being present behind the heart.

Discussion

Two main types of hiatus hernia are recognized in adults—the sliding and the rolling—and their symptoms are considered to be different. In the sliding type the whole of the lower end of the oesophagus and upper portion of the stomach are periodically or permanently in the chest. In this type the symptoms are mainly those attributed to regurgitation of gastric contents into the lower oesophagus; thus there is heartburn and regurgitation of acid into the mouth, commonly occurring on bending forward or lying down. Flatulence is common and dysphagia varies from slight discomfort to severe pain. The pain may radiate from the upper abdomen and lower chest to the neck, jaw, palate, and into the left arm, or occasionally both arms. Symptoms attributed to the presence of a portion of the stomach within the chest are uncommon in the sliding hernia. In the second type, the rolling or paraoesophageal hernia, the fundus of the stomach rolls up in front of the oesophagus through the oesophageal hiatus. The cardia usually remains below the diaphragm and regurgitation is said to be uncommon. The symptoms of oesophagitis are therefore rarer, and flatulence, upper abdominal pain, and attacks of vomiting for several days with remissions of several weeks mainly occur.

As only six paraoesophageal herniae without radiological evidence of regurgitation were present in the series of 54 cases no conclusions regarding their special symptoms can be drawn. It is interesting, however, that in two of the four instances where only left-sided pain extending to the left scapular region occurred a rolling hernia was found. Apart from this no difference in the symptoms of the two types was noted.

Allison (1951) gave an excellent composite account of hiatus hernia complicated by oesophagitis, stressing the frequency of the latter in hiatus hernia. As oesophagoscopy was carried out in few of the present series the actual incidence of oesophagitis is unknown. However, although heartburn and acid regurgitation were common, only one of the 54 patients complained of burning pain on swallowing. Bouts of vomiting, usually nocturnal, and frequently unaccompanied by nausea or other symptoms, occurred in eight patients. All had sliding herniae.

Most observers agree that hiatus hernia occurs more often in women, though Harrington found it to be commoner in men. In the present series women outnumbered men in the ratio of 3:2. The increasing incidence in the female sex with age (Belsey, 1952) is shown in the present series, 10 of the 21 men being under 50 years old, as compared with only 4 of the 33 women. The relation to obesity is well known, and 34 of the first series were overweight. However, this made little difference to the severity of their symptoms. The two instances when trauma played a part are interesting in that both episodes seemed to bear a direct relation to the onset or recurrence of symptoms. Traumatic diaphragmatic hernia due to indirect violence is well known (Harrington, 1948) and results normally from external violence, the most common cause being road accidents. More often than not it is left-sided, with the defect in the diaphragm situated in the apex or posteriorly. On rare occasions, how-

ever, it may extend up through the normal oesophageal hiatus (Chamberlain and Ford, 1953); this appears to have occurred in the present cases.

Relation to Angina Pectoris

Reid (1940) described a patient, a doctor, who suffered from recurrent bouts of severe pain in the chest and left arm which lasted for between a few minutes and five hours. The pain bore no direct relation to exertion, tending to occur with anxiety or swallowing hot food, and at night. Though physical examination and electrocardiography showed nothing abnormal it was thought for many months that myocardial ischaemia was the cause of the symptoms. A barium-meal examination then revealed a hiatus hernia, medical management of which relieved the trouble. Jones (1941) was impressed by how often the clinical histories of his patients with hiatus hernia suggested organic heart disease; he stressed, however, that "in no case did exertion invariably produce pain" and "in no case was the relief of symptoms following the use of nitroglycerin as regular as that noted in typical anginal attacks."

Wyburn-Mason (1948), in illustrating instances of anginal pain and the normal heart, quotes an example of a woman of 57 who for two years had suffered intermittently from epigastric and substernal pain radiating to the interscapular region and both arms, especially the left. She also had numbness and tingling in the fingers of the left hand independently of the "anginal" attacks. The pain occurred a quarter of an hour after meals, was sometimes accompanied by vomiting, was often of considerable severity, and made her afraid to eat. It bore no relation to exertion. A hiatus hernia was the only clinical finding. Master *et al.* (1949), from a study of 57 patients with hiatus hernia using the anoxaemia test, found six patients in whom thoracic pain was suggestive of angina pectoris. They suggested that the history was not a safe method of distinguishing the pain from that of coronary disease, but admitted that it was helpful, taking into account postural effects, relation to exercise, and drugs. Baylis *et al.* (1955) concluded from a study of oesophageal distension that pain as produced by experimental distension of the lower third of the oesophagus differed from that of cardiac ischaemia in its character, its fluctuating nature, the speed of its precipitation and abolition, and the absence of electrocardiographic change. They felt, however, that electrocardiography offered the most reliable means of distinguishing between the oesophageal and cardiac pain.

Nuzum (1952) found hiatus herniae in 25 of 100 private patients with angina pectoris, and on review considered that 7 of the 25 did not in fact have organic heart disease and that the hernia was responsible for the pain. In one the chest pain was relieved when the haemoglobin was raised from 46% to 90%, and was probably true cardiac pain, the electrocardiogram being abnormal; but in the remaining six patients pain was present in the epigastrium and lower sternum, sometimes radiating into the shoulders and arms or neck, and often bore a relation to meals. It frequently occurred on, or was aggravated by, lying down, and was relieved by sitting up. It sometimes lasted for hours or days. One patient, followed up for 14 years, had vague epigastric pain spreading up to the chest after taking food. Ten years after the onset the nature of the pain changed to that typical of myocardial ischaemia, and the electrocardiogram became abnormal. Four years later she died from a myocardial infarction. Donnelly (1953) described the case of a male clerk aged 39, with central clenching chest pain on exertion relieved by standing still for a moment. It was worse on bending forward, and slight discomfort in the chest was present for a few moments almost immediately after getting into bed. The electrocardiogram was normal, as were two barium-meal examinations; using abdominal compression of up to 60 mm. Hg, however, a hernia was shown at the third barium-meal examination. The symptoms in this patient are very suggestive of myocardial ischaemia.

In the present investigation, though many of the patients were elderly, none of the 70 from whom the first series is taken had pain which could be confused with that of myocardial ischaemia. The seven patients in the second series were referred privately to a cardiologist, as their symptoms were thought to be due to heart disease. In Case 1 pain and "wind in the chest" on walking, and relieved by stopping to belch, was suggestive of cardiac effort pain. However, the exertion necessary to provoke an attack varied considerably from day to day. This with the history of dyspepsia and the normal cardiologistical finding led to the correct diagnosis. Pain in the chest (Case 5), in the chest and left arm (Case 4), and at the xiphisternum (Case 6) could have been mistaken for the pain of myocardial ischaemia, had the patient been seen in the first attack only. Again, diagnosis was assisted by the variation of the attacks over a period of time, the dyspeptic symptoms, and absence of significant cardiac disease. In Case 7 a history of genuine cardiac effort pain was related to anaemia and disappeared following iron treatment. No confusion arose in Cases 2 and 3.

It would appear, therefore, from the present study and from the literature reviewed here that hiatus hernia (in the absence of associated anaemia) may only rarely be responsible for pain in, or spreading to, the chest, arms, neck, and jaw. When this does occur it may have the same distribution as the pain of cardiac ischaemia, and the type of pain may be similar. Direct relationship to exertion, however, is very inconstant, and when present the effort required to produce the pain varies much more than in myocardial disease. Furthermore, it often lasts for hours. The predominant aggravating factors are the taking of food, the horizontal position, and, as most authors stress, anxiety. Its relief with belladonna and antacids is usually better than with nitroglycerin.

Summary and Conclusions

In 54 of 70 consecutive cases in which a hiatus hernia was found this was the only detectable lesion. The symptoms in this group were epigastric pain, heartburn, acid regurgitation, flatulence, vomiting, and waterbrash. Postural aggravation frequently occurred. The relation to trauma in two patients is described and the presentation of eight patients with attacks of vomiting is stressed. In none of these 70 patients did pain occur which could be confused with that of myocardial ischaemia.

A further seven patients referred with cardiac symptoms are analysed and the occurrence of pain in hiatus hernia simulating that of myocardial ischaemia is discussed with special reference to the literature. It is concluded that this is a very rare feature of hiatus hernia.

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TREATMENT OF HEART FAILURE*

BY

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It is natural to expect that advances in treatment should follow a better understanding of the mechanism and dynamics of heart failure, and during the past decade there have been notable advances in practically all branches of medicine. A year or so ago I listened to a physician returning thanks for a presentation on his retirement, and the theme of his valedictory speech was that he was sorry to go because he felt that the Golden Age of medical treatment was just beginning, but that perhaps it was as well, for a knowledge of Latin and Greek no longer helped him to keep pace with the bewildering names of new drugs; and, if he bothered to open his morning mail, there was apparently one new preparation a day, although some differed only very slightly from drugs he was already using.

In the treatment of heart failure, however, digitalis, introduced in 1785 by William Withering of Stafford, a great physician and medical botanist, still reigns supreme, and Wenckebach's statement made in 1910 needs no modification to-day. "Digitalis therapy," he remarked, "is one of the most important and serious duties of the general physician. It demands a great deal of skill, power of observation, keen interest, and experience. A long life is too short to learn enough about this wonderful drug." The mode of action of digitalis was one of the first problems to be tackled by the new technique of measuring the output of the heart by cardiac catheterization, and one long controversy has now been settled. It has been proved that digitalis does indeed increase the efficiency of the failing ventricle, a view long held by the older clinicians and pharmacologists. This particular action is more impressive in left ventricular failure than in right heart failure caused by mitral stenosis, for in mitral stenosis the haemodynamic circumstances are complex and variable and not yet completely understood (McMichael, 1952).

There also remain many other problems to be solved in relation to digitalis action. Nevertheless, while mindful of Wenckebach's advice, digitalis should be given in all cases of heart failure and continued thereafter for the life of the patient when there is auricular fibrillation. Digitalis also has a place in the treatment of heart failure with normal rhythm, and there is a gathering opinion that it should be given and continued indefinitely whether the pulse is fast or slow. Some patients respond best to the folia tablets, which may have a cumulative action, some to digoxin, which is excreted more rapidly and is more expensive, and a few patients who prefer a bottle of medicine continue to take the tincture, which may lose its potency. A careful watch should be kept for signs of overdosage or individual refractoriness or idiosyncrasy. In short, digitalis therapy to date remains an art rather than a science.

A new drug, procainamide ("pronestyl"), has recently been introduced for the treatment of the cardiac arrhythmias or an attack of paroxysmal tachycardia which may precipitate heart failure. It has a quinidine-like action, depressing the heart, and it does not work

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