Diagnosis and Management of Esophageal Hiatus Hernia*

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Herniation of a portion of the stomach into the chest through the esophageal hiatus of the diaphragm is the most common type of diaphragmatic hernia. Harrington has stated that 95 per cent of diaphragmatic hernias in the adult are of this type. The fluoroscopic and x-ray study furnishes the basis for the diagnosis. It was only after the roentgen method of diagnosis became well developed and universally applied that the true incidence of this type of hernia became evident.

The Symptoms

Though it is possible for the patient with an esophageal hiatus hernia to have no symptoms from the hernia in my own experience the majority have a variety of symptoms which may be grouped as follows:

1) Symptoms suggestive of gastrointestinal disease.
2) Symptoms of acute gastrointestinal hemorrhage with hematemesis, melena or both.
3) Symptoms due to chronic blood loss.
4) Pain similar to that seen in angina pectoris and closely resembling myocardial infarction.

A combination of the above symptoms may occur in an individual patient.

Discussion of Symptoms

1) The most common symptom may be described as "indigestion" consisting of epigastric pain or discomfort related to meals, and relieved by factors which apparently decrease the size of the hernia. The occurrence of pain soon after meals makes the patient afraid to eat. The act of vomiting, eructation of gas, or the ingestion of alkali may relieve the pain. Small meals or the eating of meals in an erect position may prevent the onset of pain.

The mechanism of the production of the pain is uncertain. The pain may be associated with overdistension of the herniated portion of the stomach by ingested food or gas. Cholecystitis with or without cholelithiasis, not uncommonly occurs with hiatus hernia and may play some part in the production of pain. Peptic ulcer in the lower esophagus or in the abdominal portion of stomach or duodenum may be present simultaneously with hiatus hernia and cause pain.

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2) Acute blood loss, as evidenced by hematemesis or melena, may be the first indication of the existence of hiatus hernia. The differentiation of this type of hemorrhage from other causes of upper gastrointestinal bleeding is difficult without x-ray studies.

3) In some patients fatigue and weakness may be the symptoms that bring the patient to the physician. Anemia may be discovered on routine study. The presence of occult blood in the evacuations may indicate that the cause of the anemia is due to intestinal bleeding. The site of bleeding may be from an ulcer in the hiatus hernia or from erosion of the mucous membrane of the stomach at the point of constriction by the diaphragm.

4) Esophageal hiatus hernia may produce symptoms which may be confused with those due to serious heart disease. Substernal distress occasionally radiating to the left shoulder and down the arm into the little and ring fingers, are encountered occasionally in the patient with esophageal hiatus hernia.

Although exertion frequently precipitates substernal pain in the patient with such a hernia, it rarely does so consistently. Dietary indiscretions and nervous tension usually precipitate attacks of pain or discomfort. A large meal or the injudicious use of alcohol frequently cause symptoms, particularly in the presence of emotional disturbances. Nocturnal attacks when the patient is in a recumbent position are not uncommon. A close relationship between the onset of symptoms and the act of lying down or bending forward has been stressed by most observers. A further difference between the patient with the hernia and those suffering from angina pectoris lies in the frequent and striking relief the patient with a hernia obtains by the use of atropine. Although nitroglycerin affords dramatic relief from pain in some patients, it frequently fails.

The associated general symptoms and signs of acute peripheral vascular failure may be present in both conditions. In some of the cases of hiatus hernia the pain is relieved by vomiting or belching. The absence of physical signs such as a falling blood pressure, pericardial rub, gallop rhythm and arrhythmias does not exclude myocardial infarction.

**Diagnosis**

Fluoroscopic and roentgenographic studies are essential for the diagnosis of esophageal hiatus hernia. These examinations determine the type of hernia, the size of the hernia, the presence or absence of complications, such as ulcer. The examination will also help to rule out cardiospasm, esophageal diverticula and the phrenic ampulla. Other possible concomitant gastrointestinal diseases such as cholelithiasis, peptic ulcer and colonic diverticula must be identified if present. In the sliding type of hernia examination in the Trendelenburg position is important. The ordinary barium mixture is given by mouth and placed in a Trendelenburg position. He is instructed to take a deep breath, to hold the breath and then to bear down as though making the bowels move. This maneuver of valsalva helps to demonstrate the small esophageal hiatus hernia. The patient should also be studied in the standing position to determine if
the hernia moves down into the abdominal cavity or remains fixed above the diaphragm.

It is necessary to determine the position of the esophagus to differentiate the congenital short esophagus with thoracic stomach from the true hernia. At times this differentiation is almost impossible except by esophagoscopy and biopsy.

Esophagoscopy is indicated to determine the presence of a peptic ulcer or erosion in the esophagus or within the hernia in cases of hemorrhage and chronic blood loss. It is also helpful to obtain a biopsy specimen of the mucosa to determine if gastric tissue is actually present in the hernia, to establish the diagnosis of a congenital short esophagus.

The presence of a hiatus hernia may occasionally be suggested on an ordinary postero-anterior film of the chest. A shadow behind the heart or a gas bubble above the diaphragm may be seen. Confirmatory evidence of the presence of the hernia must, however, depend on barium meal studies.

A white female, age 42, had hypochromic microcytic anemia of unexplained origin. She also had had bloating and epigastric discomfort for sometime and occasional substernal oppression with difficulty in breathing. Examination of the heart revealed no organic disease. A large rounded gas bubble above the diaphragm was seen by the cardiac consultant who suspected esophageal hernia. A large esophageal hiatus hernia was readily demonstrated by fluoroscopy and roentgenography (Figure 1).

A white male, age 77, had attacks of dizziness and weakness for many years. An esophageal hiatus hernia, esophageal diverticulum and colonic diverticula were found by x-ray study (Figure 2). The attacks were accompanied by marked bradycardia. This was thought to be due to irritation of the vagus nerve by the diverticulum. Atropine sulphate gr. 1/75th t.i.d. abolished this vago-vagal reflex. The cardiac studies were normal. He had occasional severe attacks of substernal pain which closely resembled myocardial infarction. The pain necessitated repeated injections of opiates for relief. These attacks were thought to be due to incarceration of the esophageal hernia. Surgery was refused.
A white female patient, age 55, complained of gas all the time with pain in the left upper abdomen and a sore spot in the right shoulder blade. She also had heartburn, bloating and attacks of vomiting with occasional shortness of breath. Her cardiac examination was normal. The blood pressure was 130/80. She was worried only about heart disease. Fluoroscopic and roentgenographic studies revealed a diverticulum of the esophagus and an esophageal hiatus hernia (Fig. 3).

A white female patient, age 77, had difficulty in swallowing. She vomited if food was taken too fast. She had substernal discomfort. A fluoroscopic and roentgenogram study revealed a large esophageal hiatus hernia (Figure 4).

A white female patient, age 30, complained of tightness in chest and occasional difficulty in swallowing. The roentgenograms and fluoroscopy demonstrated a phrenic ampulla (Figure 5).

A white male patient, age 65, complained that food did not go through when he swallowed. He was bloated and gassy. The heart was normal. An esophageal hiatus hernia was demonstrated by x-ray study (Figure 6).
Discussion

It is still not too well known that substernal pain radiating into the shoulder or arm may be caused by stimuli arising elsewhere than in the heart. Patients are seen who have been given a doubtful or rather gloomy prognosis in whom an adequate examination reveals little or no evidence of heart disease. Anginal pain wholly comparable to that originally described by Heberden can be due entirely to other than cardiac causes. It is important to recognize the frequency with which such conditions simulate the typical pain of angina pectoris.

Several observers have pointed out the relative frequency with which small hiatus hernias cause substernal pain. It is important to note that anginal pain may be due to a small hiatus hernia even in the presence of coronary disease. The hernia may act as a trigger mechanism to set off the attacks. Adequate treatment of the hiatus hernia may prevent the attacks.

A variety of explanations have been offered for the pain associated with these hernias. Numerous authors have attributed dyspnea, palpitation and cyanosis, as well as the sensation of tightness in the chest, to actual displacement of the heart and mediastinal organs by the contents of the hernial sac. Such an explanation is reasonable when the hernia is large and contains a major portion of the stomach or other abdominal viscera.

Aside from the effects of displacement of the mediastinum, any attempt to explain the symptoms of esophageal hiatus hernia must be based on a consideration of the sensory pathways included in the trunks of the vague and phrenic nerves and in the afferent neurones of the upper thoracic trunks.

von Bergmann, in 1932, after a careful investigation of what he termed the "gastrocardiac complex," was convinced that the cardiac symptoms associated with diaphragmatic hernia were due to pressure on the vagus fibers, with consequent reflex disturbances of the coronary circulation.

Jackson and Jackson attempted to prove that the pain of angina pectoris was not directly related to the heart. They believed that air or other stomach contents became trapped in the stomach or the esophagus, with resulting anginal pain. They attributed this to acute spasmodic, uncoordinated contractions of the esophagus and stomach.

Morrison and Swalm reported definite cardiac disturbances as indicated by electrocardiographic changes following balloon distention of the esophagus in patients with organic heart disease. These observations were made on patients suffering from typical anginal pain associated with heart disease, and proved that pain caused by intracardiac disease may be initiated by distention of the esophagus.

That esophageal or gastric disturbances may be responsible for widespread vagal stimulation with resulting bradycardia finds ample confirmation in clinical literature and in bedside observations. That such a phenomenon in the absence of heart disease is responsible for reflex coronary constriction, which results in anginal pain in patients with diaphragmatic hernia, is more difficult to believe.
Jones, after careful studies stated that the anginal pain experienced by patients with diaphragmatic hernia is true referred pain.

The Treatment

The treatment of the patient with esophageal hiatus hernia when the lesion is small is essentially medical. Phrenicectomy or surgical repair is justified only in the large hernias or when medical measures fail to give relief from pain or bleeding.

The medical treatment consists of the following:
1) Diet. A smooth bland diet with frequent small feedings is essential. Rough and coarse vegetables are to be avoided. Gas forming vegetables like cabbage and sauerkraut are not desirable.
2) Medications.
   A) Atrophine sulphate and Tr. Belladonna are particularly indicated in the control of angina associated with gastrointestinal symptoms.
   B) Antacids like the aluminum hydroxide compounds are useful in combination with magnesium trisilicate.
   C) Nitroglycerine may relieve the acute symptoms of the hernia if it is taken before the intake of food or before retiring.
3) General Measures.
   A) Avoidance of alcohol and tobacco is important.
   B) Assumption of the upright position after eating is helpful.
   C) Avoidance of exercise immediately after a meal is urged.
   D) Avoidance of tight lacing or abdominal belts.
   E) Adequate mental and physical rest and sedation if and when indicated.
   F) Reduction in weight in the obese.

Summary

1) Esophageal hiatus hernia is the most frequent type of diaphragmatic hernia.
2) Fluoroscopy and roentgenographic studies are essential for the diagnosis.
3) The hernia may be asymptomatic, but in my experience symptoms are frequently present.
4) Symptoms may be related to (a) gastrointestinal disturbance, (b) acute blood loss, (c) chronic blood loss or (d) angina pectoris type of pain suggestive of cardiac disease.
5) The treatment is generally medical consisting of diet, medication and general measures.

Resumen

1) La hernia del hiato esofágico es el tipo más frecuente de las hernias diafragmáticas.
2) Los estudios roentgenoscópicos y roentgenográficos son esenciales para hacer el diagnóstico.
3) La hernia puede ser asintomática pero, en mi experiencia, los síntomas ocurren con frecuencia.
4) Los síntomas pueden estar relacionados a (a) disfunción gastrointestinal, (b) pérdida de sangre aguda, (c) pérdida de sangre crónica o (d) dolor de tipo de angina pectoris que sugiere cardiopatía.

5) Por lo general, el tratamiento es médico y consiste de dieta, medicación y medidas generales.

RESUME

1) La hernie de l’orifice oesophagien est le type le plus fréquent de la hernie diaphragmatique.
2) La radioscopie et la radiographie sont les éléments essentiels sur lesquels se fonde le diagnostic.
3) Les hernies peuvent être parfaitement silencieuses, mais dans les cas qu’il a examinés, l’auteur à constaté la fréquence de manifestations symptomatiques.
4) Celles-ci peuvent être: (a) des troubles gastro-intestinaux, (b) une hémorragie aiguë, (c) des hémorragies chroniques, (d) une douleur rappelant l’angine de poitrine et faisant penser à une affection cardiaque.
5) Le traitement est habituellement médical et consiste en régime spécial, médications et mesures d’ordre général.

REFERENCES