An Unusual Right Diaphragmatic Hernia * 

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INSTANCES of right diaphragmatic hernia are exceedingly rare. Geyman1 reported the large series of Eppinger in which 626 cases represented left diaphragmatic hernia, while only eight were right diaphragmatic hernia. In another series of Thomas, reported by Geyman, eight were right and 282 were left. In 1924, Carman and Fine-

The clinical diagnosis of diaphragmatic hernia may be suspected when the patient gives a history of receiving a sudden blow in the abdomen, usually in the upper abdomen, following which often there are pain and shock with collapse. Later, the patient has discomfort after eating with a sense of pressure in the right or left lower chest, depending on the site of the hernia. This discomfort is increased upon lying down and somewhat relieved by standing. Small herniae are as apt to give as much discomfort as are large ones, sometimes more, since the latter may offer little obstruction to the passage of food. In left-sided diaphragmatic hernia, there may be additional symptoms such as palpitation from pressure on the heart, this being worse when the person lies on his right side; upon exertion there may be some dyspnoea and shortness of breath. These latter symptoms often lead the examiner to suspect either cardiac or pulmonary disease instead of diaphragmatic hernia.

In right diaphragmatic hernia, the pressure-symptoms in the right side of the chest may follow eating and exertion, usually with dyspnoea and shortness of breath, and sometimes pain. Often the patient hears the gurgling rush of fluid high in his chest as compared with the uninvolved side. In these cases of right-sided hernia, the subject cannot sleep well on his left side, because of palpitation and the sensation of pressure produced by the herniated viscera lying against the pericardium.

From a roentgen viewpoint, the diagnosis of left diaphragmatic hernia is comparatively simple. The fluoroscopic examination or the X-ray films usually show the stomach with its tell-tale gas bubble and often the haustrated gas-filled loops of the colon, lying up in the thorax.

On the other hand, the roentgen diagnosis of right diaphragmatic hernia offers a certain problem in differential diagnosis. In the films, the lower half of the chest may appear opaque and so suggest pleural effusion, atelectasis or an old thickened pleura. Especially is this true when there is no gas present in the herniated viscera. In the fluoroscope, however, it is not such a puzzling problem inasmuch as the air shadows in the lung parenchyma often are visible about the sides of the contained viscera. When the stomach alone is present in the hernia, the tell-tale gas bubble seldom is seen because it remains in the fundus when the person is in the upright position. When a loop of the transverse colon is present, and gas is contained within it, the bowel is readily identified at the fluoroscopic examination.

Unfortunately, in many of these cases a fluoroscopic examination is not available to determine the cause of the opacity in the lower chest as shown in films, and the result is that a diagnosis of right pleural effusion often is made. This diagnosis then leads to repeated thoracentesis. Such confusion, occurring in a child, was reported by Truesdale.3 Thoracentesis produced the flow of a milky fluid through the needle because the child had ingested milk previously and the needle had entered the stomach. Our own case, reported below, also illustrates this point. Supposing the opacity on the right lower chest to be due to fluid, one physician sought to tap it, but only blood was obtained and the procedure was interrupted. On still another occasion, another physician, falling into the same error, obtained a turbid, watery fluid, but no observation was made to determine whether or no the roentgen opacity in the chest diminished in size. Now we know that this physician obtained gastric fluid.

CASE REPORT

The following is a brief history of a patient in whom right, diaphragmatic hernia was found.

Case J. E.—Age 41, male, white, unmarried; occupation, automobile racer and salesman. The family history was not important. The patient had the usual childhood diseases, had suffered a skull fracture in 1921 with skin burns following an auto-racing accident.

He was seen by one of us (W.C.) on January 17, 1934, at which time he complained of pain in the right chest on exertion, shortness of breath, palpitation on lying on his left side and pressure in the lower right chest after eating and on lying down.

The present illness had its onset in June, 1927, following an accident while piloting a car in the Memorial Day races at the Indianapolis Speedway. When the accident occurred, the patient was thrown violently against the steering wheel. He became unconscious; on awakening

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he suffered much pain in the right chest and was removed to a hospital. After examination, it was reported that a couple of ribs had been fractured on the right side and fluid was present in the right chest. Pneumonia followed but the patient recovered. He stated that the fluid remained in his chest for the next two years, but, in 1930, a physician obtained only blood on performing a thoracentesis. His symptoms continued and, in 1931, another thoracentesis was done; on this occasion a turbid, watery fluid was obtained. No improvement was noted in his symptoms. The patient could not resume his auto racing because the exertion caused pain in his right chest, associated with shortness of breath. He could not sleep on his left side as that position caused palpitation and a feeling of pressure about his heart. He had experienced pressure in his right chest on lying down and after eating.

Physical examination (January 17, 1934, at 4:00 p.m.)—height 5 feet 9 inches, weight 161 lbs., temperature 98.6 degrees, pulse 76, respiration 18. Patient presented the appearance of a well-developed and well-nourished man, experiencing no apparent pain or discomfort. The scalp was clear; there was a recession of the hair over the temples. The eyes, nose, and ears essentially were negative. There was no adenopathy or palpable thyroid. The chest examination revealed no diaphragm excursion and percussion dullness over lower half of the right chest with absence of breath sounds; râles were absent. Heart—left border dullness was at the nipple line; the sounds were regular and no murmurs were heard. The blood pressure was 118/72. Abdomen—scaphoid with moderate subcutaneous fat. Palpation elicited no tenderness or masses. The liver edge could not be felt, nor could the spleen. Genito-urinary examination and extremities essentially were negative.

The patient then was referred to one of us (W.C.B.) for X-ray films of chest and a fluoroscopic examination. The X-ray film revealed an area of opacity occupying the right chest extending from the level of the fourth rib anteriorly downward. The shadow was uniformly dense throughout and suggested fluid. The fluoroscopic examination showed small gas collections within this opaque area; a diaphragmatic hernia was diagnosed. The patient was then given a drink of barium sulfate suspension. The barium was observed to pass into the pylorus which then was seen to be located in the opaque area of the right chest. This demonstration was facilitated by having the patient lean to the right. A gas bubble remained and its presence signified that, in addition to the pyloric half of the stomach, the colon also was included in the hernial area intruding into chest cavity.

Films were taken at once and again on the following morning. These films (Figs. 1 and 2) reveal the presence of the terminal half of the stomach and the duodenum as well as a loop of the transverse colon within the right chest. Furthermore, soft tissue shadows indicated the presence of the right lobe of the liver in the chest and extending upward to the level of the fourth rib (Fig. 2). No leaf of the right diaphragm could be demonstrated. The left diaphragmatic leaf was intact; the fundus of the stomach lay just below it; adjacent to it was seen the shadow of the spleen and kidney (Fig. 2).

The roentgen diagnosis was a large, right diaphragmatic hernia associated with the pyloric-antral portion of the stomach, a loop of transverse colon and the right lobe of the liver in the hernia and lying within the thoracic cage.

Operation—Subsequently the patient decided to seek surgical aid at the Mayo Clinic. On April 7, 1934, Doctor S. W. Harrington operated. We are indebted to him for supplying us with the details of the operation. We quote from his letter:

"His case has, indeed, been a very interesting one as it is quite unusual to have a traumatic hernia in the right diaphragm with practically the entire liver in the thorax. At the time of operation on April 7, we found a huge opening in the right diaphragm extending diagonally across from the anteromedial portion to the posterolateral portion of the diaphragm. Practically the entire stomach,