Omental Herniation through the Esophageal Hiatus in a Cat

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Abstract. A four-year-old male cat was presented with regurgitation. Thoracic radiography and contrast radiogram showed a large oval mass and elevated esophagus. Exploratory thoracotomy showed omental herniation into the posterior mediastium through the esophageal hiatus. Because the mass of the omental herniation was so large, celiotomy through a paracostal incision was combined in order to return the omentum to its normal position. The diameter of the esophageal hiatus was approximately 1 cm but no fibrous adhesion was observed around the hiatus. Continuous 1–0 surgical sutures on the hiatus reduced the diameter of the hiatus. The cat made a successful postoperative recovery without complications.

Key words: esophageal hiatus, feline, omental herniation.

Esophageal hiatal hernia (HH) is defined as protrusion of abdominal contents through the esophageal hiatus of the diaphragm into the thorax. Hernia can be classified broadly as sliding HHs or as paraesophageal HHs and several combinations of these are also described [1–6, 8, 10–13]. Gastroesophageal reflux usually accompanies HH in dogs and cats [2–5]. Reflux esophagitis is responsible for such clinical signs as hypersalivation, regurgitation, and vomiting, which are often noted immediately after a meal [3–5, 10]. In many cases of HHs, the omentum sometimes protrudes through the diaphragm, carrying some abdominal contents with it, but herniation in which the omentum protrudes through the esophageal hiatus only is extremely uncommon in humans [14–16]. The present study reports on a rare case of HH in a cat.

A four-year-old male American short hair cat was presented with a history of regurgitation, which has been observed about once a month, but the present regurgitation was more severe than usual. The cat had been vaccinated against feline panleukopenia and had been healthy previously, although it had a coccidiosis at two months of age. Physical examination revealed no abnormal finding. Laboratory examination revealed no abnormal finding except for electrolyte imbalance and an increased packed cell volume resulting from dehydration. Feline leukemia virus test was negative and the blood cell count was not indicative of lymphoma. For the initial treatment, H2-blocker, metoclopramide and antibiotics were administered with fluid infusion. After these treatments, the laboratory findings returned to normal, but there was no change in the clinical manifestation. Thoracic radiography showed a sharply defined large homogenous oval mass posterior to the heart, without calcification or cavitation. A displacement of the esophagus at the level of the mass was observed on contrast radiograms, which were obtained after oral administration of barium sulfate (Figs. 1, 2). No herniation of either the stomach or intestines into the thorax was observed. Since we thought that the herniation might be intermittent and it must be difficult to detect without exerting pressure on the abdomen to cause protrusion of the stomach, a contrast radiogram was combined with compression of the epigastric region. Nevertheless, the results showed no change in the mass, and the stomach had not protruded into either the esophagus or the thoracic cavity. Esophagoscopy revealed compression of the esophageal wall from the outside. Furthermore, ultrasound examination demonstrated a capsulated mass, which was more echogenic than the hepatic parenchyma. Small vessels were observed inside the mass on color Doppler ultrasound examination, but differential diagnosis, as to whether there was omental herniation or mediastinal neoplasm, was not confirmed by these findings. Exploratory thoracotomy was selected for the purpose of differential diagnosis.

The patient was premedicated with atropine and diaz-
epam, and anesthesia was induced with ketamine and maintained with a combination of isoflurane and oxygen. Exploratory thoracotomy was then performed at the ninth intercostal space and an encapsulated fatty mass (7 × 4 × 3 cm) derived from omentum majus was found. It was accompanied with much difficulty in restoring the omental mass from the thoracic cavity. In order to restore the mass more easily and safely, a paracostal celiotomy incision was then made 2 cm caudal to the last rib. No herniation of the stomach or intestines was observed. The omentum was restored to the abdominal cavity with traction applied caudally through the esophageal hiatus. The esophageal hiatus was about 1 cm in diameter and no fibrous adhesion was observed in its surroundings. Four 1–0 surgical sutures on the hiatus reduced its diameter.

A temporary chest tube was inserted for evacuation of the thoracic cavity. The lateral thoracotomy incision and the paracostal celiotomy incision were closed by the standard procedure. The cat had a smooth recovery from anaesthesia and was maintained in an O2 cage for a day and treated with antibiotics for 10 days postoperatively. Solid food feeding was started 2 days postoperatively. A thoracic radiogram showed satisfactory correction of the hiatal hernia. Postoperative recovery was uneventful and clinical manifestations have disappeared.

The omentum sometimes herniates through the esophageal hiatus with the stomach or intestines, but isolated herniation of the omentum is very rare in humans [14]. We could not find omental herniation through the esophageal hiatus in cats on the Internet literature index, and the veterinary practitioners sometimes exclude this disease from differential diagnosis. Along with asking about the patient’s progress and clinical manifestations, contrast radiography is beneficial in the diagnosis of HHs [2, 6, 11–13], but in the present case there was no herniation of the stomach or intestines into the thoracic cavity and it was difficult to diagnose whether the omentum passed through the esophageal hiatus by these methods. Correct diagnosis of omental herniation requires evidence of omental fat accompanied with omental vessels passing through the esophageal hiatus. Furthermore, preoperative differential diagnosis also included a mediastinal neoplasm, which was not suggested by blood examination but was not excluded by ultrasound examination. In humans, cases were misdiagnosed as mediastinal lipoma after being identified as an intrathoracic mass [15–16].

Treatments for HHs include medical and surgical procedures. Medical therapy is directed at reflux esophagitis. H2 receptor blocker, cimetidine or ranitidine, and the pro-motility drug metoclopramide are commonly used. Although it is not curative, medical therapy based on these drugs is sometimes effective for small HHs [10]. Unfortunately, because it was not effective in the present case, surgical intervention was conducted as the last resort.

Exploratory thoracotomy revealed an omental herniation through the posterior mediastium, but the large content of the herniated omentum prevented reduction by standard procedures, so that a combination of thoracotomy and laparotomy were used to correct the herniation more safely and readily.

Reduction in the size of the hiatus rarely results in complete resolution of clinical signs [12, 13]. Furthermore, reflux esophagitis might result from narrowing of the hiatus by suturing [4, 10], but the present patient had an uneventful recovery and no evidence of recurring herniation.

In humans, the major contributing factors predisposing to omental herniation through the esophageal hiatus generally include pregnancy, aging and obesity. An omental herniation through the esophageal hiatus sometimes includes perigastric fat, which protrudes along the abdominal surface of the diaphragm through the phrenoesophageal membrane. This membrane is normally rich in elastic fibers, but the amount of elastic tissue decreases and the esophagus becomes much more mobile in people over 50 years of age [2]. In obese patients, the omentum may be more prominent than usual, predisposing to herniation without any significant gastroesophageal hernia [7, 9, 14]. On the other hand, some reports suggest a relationship between HHs and a traumatic event [1, 3, 4, 10–12], but the cat in the present case had no history of a traumatic event and was neither obese nor aged. Therefore, the esophageal hiatus in the present case might relate to congenital laxity or degenerative change in the muscular structures of the hiatus. Under these conditions, the omentum protruded accidentally through the esophageal hiatus without gastrointestinal tract accompanying it.

This report serves to demonstrate that whenever a homogenous mass is recognised in the lower portion of the thoracic cavity, omental herniation should be considered as a possible differential diagnosis.

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