What Is Your Diagnosis?

**History**

A 1-year-old castrated male ferret was evaluated because of an acute onset of vomiting mucus and respiratory distress. Physical examination at the time of admission revealed that the ferret was lethargic and mildly dehydrated, had an increased respiratory effort, and was hypothermic (37.1°C [98.7°F]). Abdominal palpation elicited signs of pain and revealed splenomegaly. Results of serum biochemical analysis revealed that the ferret was hyperglycemic, hyponatremic, and hypokalemic. Radiographs of the abdomen were obtained (Figure 1).

Determine whether additional imaging studies are required, or make your diagnosis from Figure 1—then turn the page →

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The stomach is severely distended with gas and ingesta, and the gastric axis is rotated, with the pylorus located in a dorsal and cranial position (Figure 2). Additionally, notice the loss of intra-abdominal contrast (asterisk) and the enlarged, malpositioned spleen along the right abdominal wall (arrowhead).

**Radiographic Findings and Interpretation**

The stomach is severely distended with gas and ingesta, and the gastric axis is rotated, with the pylorus located in a dorsal and cranial position (Figure 2). Additional findings include loss of intra-abdominal contrast and an enlarged, malpositioned spleen located along the right abdominal wall (arrowhead). The radiographic findings are compatible with gastric dilatation-volvulus (GDV) with secondary peritoneal effusion and splenic congestion or torsion. The radiographic findings support the diagnosis of GDV.

**Comments**

Laparotomy revealed a large amount of blood-tinged peritoneal effusion and torsion of the stomach along its longitudinal axis. After the stomach and spleen were rotated to a normal position, extensive clotting was noted in the splenic vasculature and the stomach appeared necrotic. The condition of the patient started to worsen intraoperatively; because of the poor prognosis, the owners elected to have the ferret euthanized.

Gastric dilatation-volvulus, also referred to as gastric torsion, is a condition in which the stomach becomes rotated on its mesenteric axis and severely distends with gas or fluid. Generally, the stomach rotates clockwise between 90° and 360°. In the human literature, gastric volvulus is defined as rotation of the stomach > 180° resulting in complete obstruction, whereas gastric torsion is defined as partial obstruction and rotation of the stomach < 180°.

Primarily, GDV occurs in large and giant breeds of dogs; however, it has also been reported for cats and guinea pigs. Predisposing factors contributing to GDV may include family history, stress, increased thoracic depth, exercise, diet, and concurrent disease. To our knowledge, there are no reports documenting GDV in ferrets.

Abdominal radiographs, particularly the right lateral projection, are helpful in differentiating GDV from simple gastric dilation. Knowledge of gastric radiographic anatomy is important in the diagnosis of GDV. On radiographic evaluation the pylorus will normally be located ventral and to the right of the fundus; in right lateral and dorsoventral projections, the pylorus will be fluid filled. In a patient with GDV, the pylorus will typically be in a dorsocranial location to the left of midline; it will appear gas filled in right lateral and dorsoventral projections of the abdomen. Splenic torsion can occur in conjunction with GDV; radiographic findings may include splenic malposition, splenomegaly, and splenic emphysema. If available, Doppler ultrasonographic examination can be used to characterize blood flow in the splenic veins and thereby aid in the diagnosis of splenic torsion. Additional radiographic findings in a patient with GDV may include pneumoperitoneum and loss of intra-abdominal contrast.


