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Veterinary Practice News

THE INFORMATION LEADER
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AND BUSINESS

What's Your Diagnosis?

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For Veterinary Practice News

HISTORY: Adult Domestic ShortHair; 1.5 years old. Vomiting for two days. Anorexia for two days. Painful on palpation of the abdomen. Upper GI study was performed. Two representative images after administration of contrast are presented.

Questions to Answer

1. What are the primary findings?
2. What do you think is the primary reason for the clinical signs?

Radiographic Findings

There is contrast noted within the stomach and extending in the small intestines. Several loops of small intestine are moderately dilated and there is plication of many of these loops. The detail in the abdomen is normal but there also appears to be clumping of these abnormal loops of intestine in the ventral abdomen.

Interpretation

Dilated, plicated small intestine consistent with mechanical

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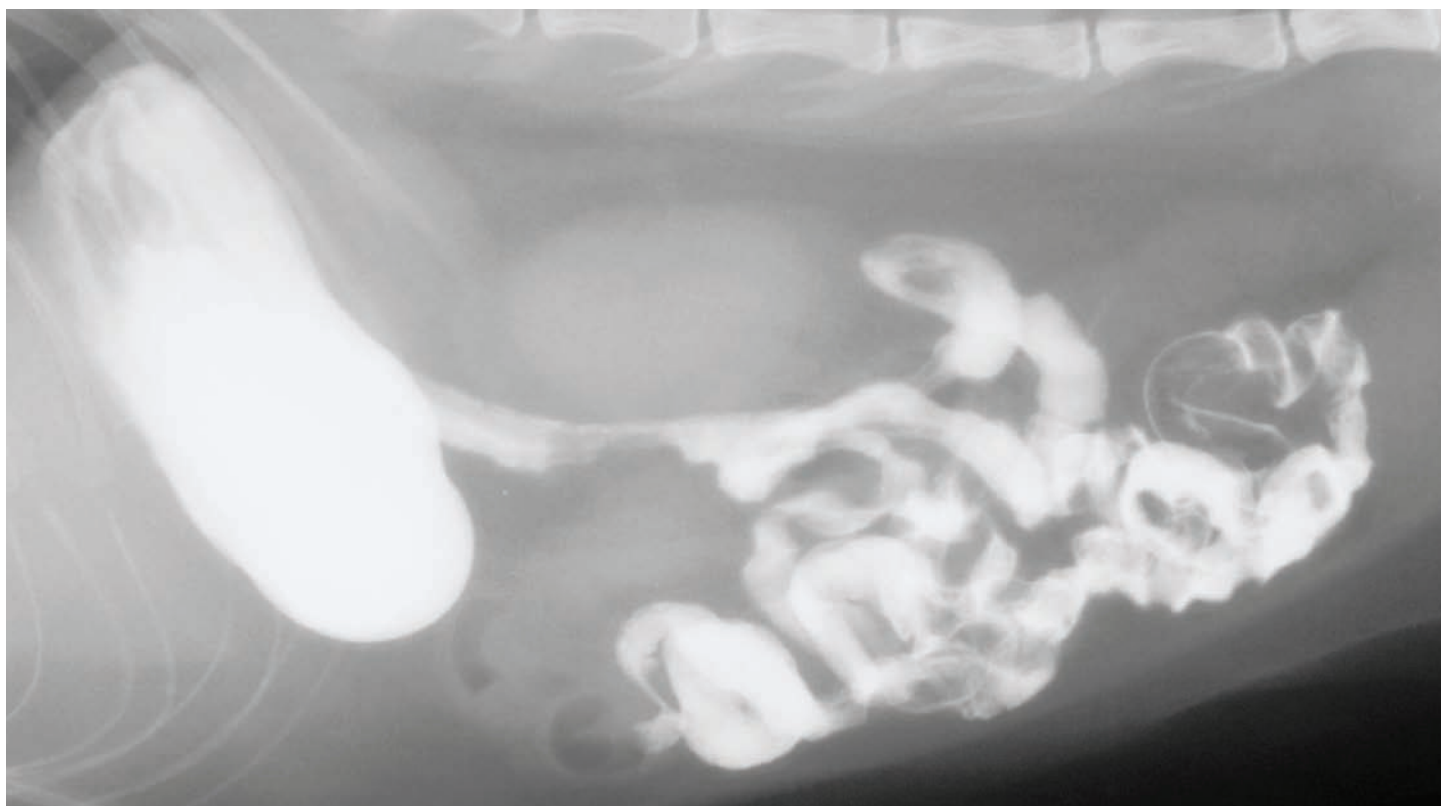
ileus from a linear foreign body obstruction. This is the cause of the clinical signs.

Discussion

The most common problem related to the GI tract detected on survey radiography is ileus. By definition, ileus strictly means failure of passage of the intestinal contents. There are two basic categories of ileus: one, mechanical (or obstructive or dynamic); two, functional (or paralytic or adynamic).

Mechanical ileus is usually associated with a physical obstruction of the intestines due to an intraluminal or extraluminal blockage such as a foreign body or tumor. The radiographic signs of mechanical ileus are focal dilation of the bowel with distension proximal to the obstruction (i.e. some are dilated and some are normal).

Often, a stacking of loops with hair-pin turns may be seen.



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continued

Linear foreign bodies can cause plication and may encompass all the intestines. A distal obstruction can sometime mimic functional ileus but this is not very common.

Functional ileus is due to a generalized neurologic/muscular dysfunction of the intestines such that progressive motility is lost. This is commonly seen in enteritis, dysautonomia, etc. The radiographic signs include generalized dilation of the bowel, which is usually mild to moderate in severity.

It is important to differentiate the two types of ileus, as typically, mechanical ileus often requires surgical intervention while functional ileus is often treated medically. Normal small intestines should be less than two to three times the width of a rib. It may not be possible to differentiate these types of ileus and, often, an upper GI study is helpful to better evaluate these problems.

Contrast Studies

UPPER GI: The purpose is to distend the gastrointestinal tract with an alternative radiopacity, which interfaces with the mucosal surface.

TECHNIQUE: Use 37 percent W/V liquid barium sulfate suspension. If possible, prepare the animal by withholding food for 12-24 hours and use enemas to cleanse the colon. It is important to obtain survey radiographs before beginning the study to verify proper preparation and for use as comparison to contrast films.

Administer approximately 6 ml/lb of contrast via stomach tube. You may need slightly more in small dogs and cats and less in large dogs. The objective is to distend the stomach with barium. After administration, obtain RL, LL, VD and DV views. Then obtain two orthogonal views every 15 minutes for one hour, then every hour until all the contrast is in the colon.

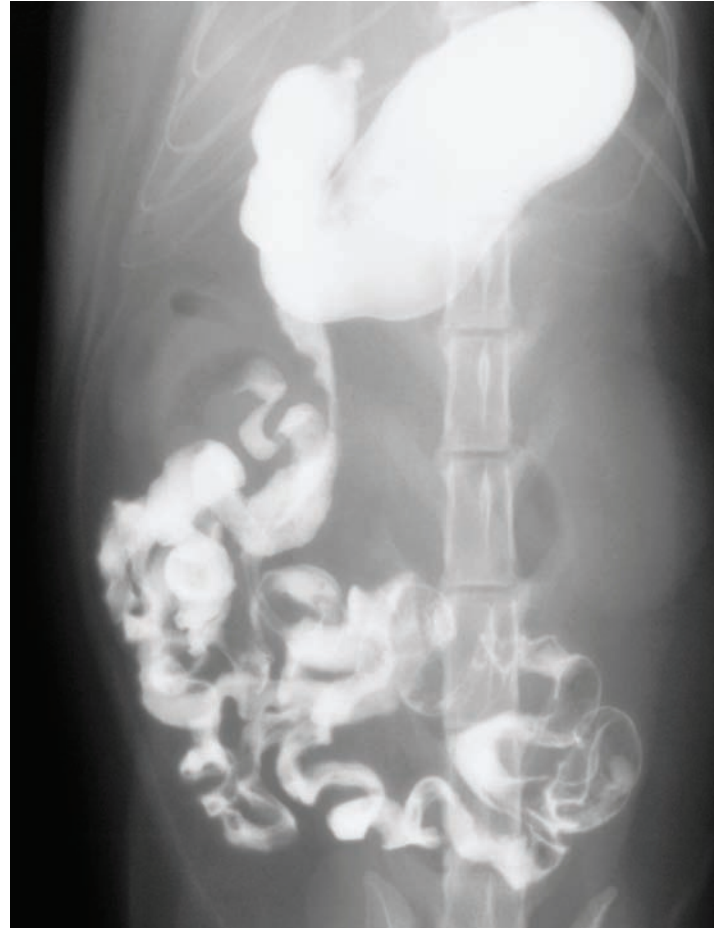
In cats, after the first hour, obtain views every 30 minutes. It is empiric which views to obtain after the initial images, depending upon the abnormalities seen. For example, if suspicious abnormalities are noted on the left lateral view, this should be repeated during when the next set of images are taken to see if the suspected lesion is repeatable.

Evaluation

In the stomach, the wall should be thin and uniform. The emptying time in the dog is up to four hours and the transit time should be a maximum of 15 minutes. In cats, the emptying time of the stomach should be less than one hour.

The small intestines have a normal fimbriated border on the mucosal surface. In the duodenum, pseudoulcers may be seen (lymphoid aggregates) on the antimesenteric border. In cats, a "string of pearls" may be seen in the duodenum due to strong circular muscle contractions.

The emptying time of the small intestine in the dog is up to five hours, three hours in the cat. In cases of mechanical obstruction, the emptying and transit times are often delayed. For me-



chanical obstruction due to foreign objects, an intraluminal filling defect in the contrast which is repeatable (therefore more images are always better) to verify that an abnormality exists.

As seen in this case, linear foreign bodies will cause plication of the intestines. Normally, the bowel should have relatively straight lengths with smooth curves rather than the sharp hairpin turns as seen in this case.

Remember that if a perforation is suspected, use an iodine-based contrast agent. Leakage of barium into the peritoneal space can incite a severe granulomatous reaction.

Summary

In general, repeatability is the key to making a conclusive diagnosis on an upper GI contrast study. Therefore, it is important to take the images as directed. Also, it is important to complete the study if no lesions are found, and this study is considered complete when all the contrast has passed into the colon. ●

Dr. Bahr is a consulting radiologist for PetRays Veterinary Radiology Consultants.