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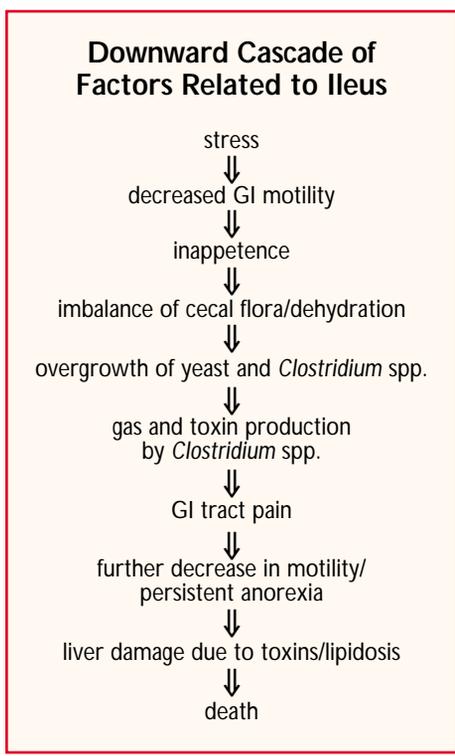
ILEUS IN DOMESTIC RABBITS

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Ileus in domestic rabbits is one of the most challenging problems a practitioner can face, yet it is rarely a primary disorder. Because ileus is often triggered by stress, it can occur for a variety of reasons including systemic disease, local infection, poor diet, pain (from almost any source, systemic or local), and even psychological trauma (for example, anxiety due to change of territory, loss of a partner or separation from owner).

Failure to recognize ileus and provide immediate and appropriate treatment of the initial clinical signs can result in a “downward spiral” in which each clinical sign generates another, more serious one. If this cascade is not interrupted, the condition can quickly become life-threatening. However, providing overly aggressive treatment may be just as dangerous. The most important distinction to make when a rabbit presents with the signs described in this paper is whether the cause is ileus (a medical problem) or true obstruction (a surgical problem).

Ileus is by far the most common of these two conditions in rabbits. Rabbits have a poor recovery rate from surgery involving the stomach and intestinal tract, so it should be avoided unless absolutely necessary.



These protocols and practices have been developed by rabbit caretakers (many of whom are professionals in areas such as biology, microbiology, chemistry, nutritional biochemistry and medicinal pharmacology) working in conjunction with interested veterinarians over more than a decade.

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Adapted from “GI Stasis: The Silent Killer” by Dana Krempels. For full original text see the web site: fig.cox.miami.edu/Faculty/Dana/ileus.html



Traditional Treatments: Helpful or Harmful?

Probiotics

- Do not give yogurt* to a rabbit in ileus because the milk starches and sugars provide a high-energy substrate, which may promote overgrowth of yeast and *Clostridium* spp.
- Although some practitioners use powdered lactobacillus to try to help restore normal cecal flora balance, at this time there is no clinical evidence to support the hypothesis that this is effective.
- Feeding cecotropes from a healthy rabbit might help supply normal intestinal flora, but the stress of this procedure may outweigh the possible benefit.

“Hairball” Remedies

- Only fresh or frozen pineapple will provide active enzymes (bromelain). However, neither bromelain nor papain (papaya enzyme) dissolves keratin, the main protein component of hair. The sugars in pineapple juice may actually promote overgrowth of *Clostridium* spp.
- It may be inadvisable to use petroleum-based laxatives* such as Laxatone®, as these hydrophobic products may coat an intestinal mass, making it more difficult to hydrate.

Systemic Antibiotics

- Unless the ileus is known to be caused by a bacterial infection, antibiotics are not recommended.

Gastrotomy

- The mere presence of a mass of hair and ingesta in the stomach should not be considered an indication for gastrotomy. A mass of ingesta in the stomach is almost always better managed medically than surgically unless a true obstruction is suspected by physical examination and/or radiographs. Survival after surgery of the digestive tract, particularly gastrotomy, is reportedly low in rabbits.

Ileus is frequently misdiagnosed as “hairball.” Although hair and ingesta may collect in the stomach and/or intestine as a result of ileus, hairballs are almost never the primary cause. Hair is normally found in the rabbit gastrointestinal (GI) tract and passes without incident if the rabbit is well hydrated and fed plenty of fresh grass hay. Attempts to treat ileus with “hairball remedies” such as pineapple juice and intestinal lubricants are usually ineffectual and may actually exacerbate the problem (see column to left).

Largely because the rabbit is a prey species and can become easily stressed in an unfamiliar environment, successful treatment of ileus is greatly facilitated if a working partnership can be established with the client, so that hospitalization can be avoided. A rabbit at home generally recovers more quickly than one hospitalized in an unfamiliar and frightening environment. Separating the patient from a bonded rabbit companion increases stress and can impede recovery. However, the client must be prepared to monitor the rabbit and provide the intensive supportive care required.

Recovery from ileus is often characterized by “fits and starts.” The rabbit will produce fecal pellets, go back into distress and then gradually have greater and greater success at clearing intestinal contents. Patience and persistence are key, and the practitioner is strongly urged not to use physically aggressive measures, which may do more harm than good.

Recognizing Ileus

Some or all of these clinical signs may be present:

- Decreased appetite or anorexia
- Abnormal fecal production



- no stool or greatly reduced size/volume of stool
- runny stool (malformed cecotropes)
- mucoïd stool (indication of enteritis)

Indications of pain

- hunched posture
- loud tooth grinding
- shallow, rapid respirations
- abdominal tenderness upon palpation

Abnormal intestinal sounds

- absolute silence (cessation of peristalsis)
- loud gurgling (gas accumulation possibly indicating imbalance of cecal flora)

Abnormal body temperature

- hypothermia (Normal body temperature is 101-103°F but the temperature can be higher in small breeds, during periods of elevated ambient temperatures, and in rabbits that are stressed.) A temperature of 98°F or lower is not uncommon during ileus, and may be even more dangerous than fever. However, high fever in combination with other clinical signs can be a useful indicator of the primary trigger of ileus, such as infection. The owner should take the rabbit's temperature prior to a clinic visit to avoid artificial elevation from the stress of travel.

* Carbohydrates inhibit the release of motilin, a protein that (in rabbits and humans) helps regulate upper GI motility by stimulating contractions of the small intestine. Administering products that contain simple sugars and digestible carbohydrates may interfere with restoration of normal GI motility. (Brewer NR, Cruise LJ: Physiology. In Manning PJ, Ringler DH, Newcomer CE (eds): The Biology of the Laboratory Rabbit. Academic Press, San Diego, 1994, p 65.)

Medical and Supportive Treatment

IN THE CLINIC

- **Normalize body temperature** (circulating water heating blankets, pet bed heaters or hot water bags; warmed SC or IV fluids). Monitor temperature carefully to avoid iatrogenic hyperthermia.
- **Administer analgesics** (extremely important)
 - flunixin meglumine (Banamine® 1-3 mg/kg IM or SC q12-24h up to 3 days) This drug appears to be safe and effective in rabbits and does not appear to cause ulceration of the GI tract as it does in some other mammals. It is contraindicated in animals with renal disease.
 - sulfasalazine - 1/8 - 1/4 crushed 500 mg tablet per rabbit q8-12h (excellent at topically reducing inflammation of intestinal mucosa).
- **Rehydrate** (NOTE: "skin tenting" is not a reliable gauge of a rabbit's hydration state.)
 - lactated Ringer's - 100-120 ml/kg/day SC divided q8h. If the rabbit is hypothermic, fluids should be warmed first. In cases of circulatory compromise, intravenous fluid administration via catheter in the hospitalized rabbit may be indicated. Warm water enema may help hydrate lower GI contents. CAUTION: the rabbit colon is extremely delicate; instruments must be pliable, well lubricated and inserted very gently.
- **Restore GI motility**
 - cisapride (1.0-1.5 mg/kg q12h) and/or metoclopramide (1.0-1.5 mg/kg q12h). These drugs may work better together than separately, perhaps because each has a different mode and site of action in the GI tract. (Either drug is contraindicated in cases of true obstruction.)
- **Stimulate appetite**
 - vitamin B-complex added to the fluids may stimulate the appetite and supplies necessary coenzymes, which the rabbit may not be producing. Cyproheptadine may also be useful as an appetite stimulant.

- **Prevent/treat enterotoxemia**
 - Questran® (cholestyramine) - 2 g suspended in 20 ml water PO q8h.
- **Syringe feed** (can be done at home):
 - Critical Care for Herbivores® (Oxbow Pet Products), prepared as per package directions, or softened pellets mixed with vegetable baby food and Pedialyte.®



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AT HOME

- **Administer liquid pediatric simethicone** to reduce gas pain: 1-2 ml (20 mg/0.3 ml) once an hour for 2-3 doses.
 - **Administer gentle abdominal massage** several times daily (see below).
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- **Continue SC lactated Ringer's** - 100-120 ml/kg/day divided q8h.
 - **Administer oral fluids**, delivered via syringe 10-20 ml q8h. Avoid fluids with sugar, which may promote overgrowth of *Clostridium* spp.
 - **Monitor body temperature** via well-lubricated, plastic rectal thermometer, and warm rabbit if necessary.
 - **Syringe feed** as described above.

Diagnosing the Underlying Cause

Unless the primary cause of ileus is determined, the condition may return or become chronic. Thorough physical examination of the rabbit, with emphasis on some of the most common disorders known to elicit ileus, will help to identify the underlying cause. The following are some potential causes of ileus:

The following are some potential causes of ileus and associated diagnostic tests. However, if the rabbit is stressed or compromised, diagnostic tests may need to be postponed until the patient is stabilized.

- **Molar pathology** (overgrowth, abscessation): oral exam, skull radiographs
- **Urinary tract disease** (renal failure, urinary tract infection, urolithiasis, bladder sludge): radiographs, CBC, chemistry, urinalysis, urine culture, abdominal ultrasound
- **Skeletal lesions** (fractures, dislocations, joint disease): radiographs
- **Soft tissue abnormalities** (tumors or abscesses): radiographs, abdominal sonogram
- **Hepatic or renal disease** (lipidosis, toxicity): CBC, chemistry, abdominal ultrasound
- **Psychological triggers** (loss of bonded companion, separation from owner, move to new territory)



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- **Parasitic** (coccidiosis in young animals): fecal exam