Proceedings of the 35th World Small Animal Veterinary Congress
WSAVA 2010
Geneva, Switzerland - 2010

Next WSAVA Congress:

2011 WSAVA CONGRESS
14-17 October, 2011 Jeju, KOREA

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GASTROINTESTINAL STASIS IN RABBITS AND RODENTS

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INTRODUCTION

Many disease problems in rabbits and rodents are directly or indirectly diet-related. Inversely, many diseases outside the digestive tract have also a direct or indirect impact on the gastrointestinal tract either through pain, reduced exercise, poor food or water consumption. Problems induced by diet, poor health status or anorexia often involve the disruption of the animals gastrointestinal motility, which can lead to a critical situation in short time. Therefore, the current report should give a brief overview of the pathophysiology, early diagnosis, prevention, and treatment of the gastrointestinal stasis syndrome in rabbits and rodents.

ANATOMY

Rabbits and the various rodent species have a different gastrointestinal anatomy, physiology and thus different dietary requirements. The gastrointestinal tract in rabbits and porcupine-like rodents (e.g. guinea-pigs, chinchilla and degus) combines a simple stomach with hindgut cecal fermentation and a complex sorting mechanism of ingesta for caecotroph formation in the large intestine; in rabbits, this part of the colon is haustrated, and in rodents it is equipped with a distinct colonic groove. These animals are foli-/herbivorous and require large amounts of crude fiber in the diet for the physiologic digestion process as well as for dental health. In contrast, rat-(rat, mice, gerbils, hamsters) and squirrel-like rodents, are adapted to a granivorous diet and have a smaller cecum and a less pronounced or even missing colonic groove. In addition, the teeth of rabbits and porcupine-like rodents are continuously growing (incisors and cheek teeth), in contrast to rat- and squirrel-like rodents, which have an only limited period of growth in the cheek teeth. The described anatomical and dietary differences might explain the increased occurrence of gastrointestinal stasis in the rabbit and porcupine-like rodent group in captivity.

PATHOPHYSIOLOGY

Gastrointestinal stasis is a potentially life threatening condition in rabbits and rodents, where muscular contractions of the stomach and intestines are reduced and normal bacterial flora in the digestive tract becomes unbalanced. Reduced gastrointestinal motility can cause ingested hair and food to reside anywhere along the gastrointestinal tract. Harmful bacteria, such as Clostridium species can proliferate, their numbers overwhelming those of the normal, beneficial bacteria and fungi in the gastrointestinal tract. The unphysiologic bacterial flora can produce potentially dangerous endotoxins and / or gas. Gastrointestinal bloat and blockage leads to abdominal pain followed by reduced activity and anorexia. Endotoxin shock and liver damage can occur as a serious life threatening side effect of gastrointestinal stasis. Hepatic lipidosis is a severe threat in every anorectic rabbit or rodent.

CLINIC

Animals with gastrointestinal stasis can quickly become lethargic and may exhibit signs of pain. However, initial signs are reduced appetite. They produce very small (or no) fecal pellets, which may be very dry or encased in clear or yellowish mucus. Excessive gas production may be present. During abdominal auscultation the healthy intestinal sounds may be replaced either by very loud, violent gurgles (gas moving) or silence. The animal usually shows discomfort during abdominal palpation with a tense abdominal wall. The stomach can often be palpated as a hard mass behind the ribs, especially in the later stages of the disease and the intestinal tract feels very “doughy”, an indication of dehydration. As the disease progresses, animals become totally inappetent and depressed. It adopts a hunched body position and may sit for hours, immobile in the corner of its enclosure. Dehydration occurs very quickly. Remarkably, tenesmus and rectal prolapse can occur in chinchillas as suspected secondary problem of gastrointestinal stasis.

DIAGNOSTIC

Gastrointestinal stasis is typically a presumptive diagnosis. Clinical findings suspicious for gastrointestinal stasis are generally supported by radiology and ultrasonography. Radiologic findings might be inconclusive because blocked ingesta and hairs appear similar to normal ingesta. However, an anorectic animal should have a small stomach filled with less ingesta than normal. In case of gastrointestinal stasis an enlarged gas- and ingesta filled stomach and large amount of intestinal and cecal gas might be present on radiographs. A horseshoe-shaped gas shadow in the stomach is indicative for a trichobezoar, which are abnormal accumulations of hair, and are thought to be a result of the reduced gastrointestinal motility. Ultrasonographic examination can be complicated by large amounts of gastrointestinal gas. But atomic gastrointestinal appearance with unusual large amounts of ingesta is a further indication for a reduced motility of the gastrointestinal tract. A blood sample can aid in differential diagnosis, assist with choice of fluid therapy and offer a prognostic indicator. A lipemic sample or the presence of hyperglycaemia in
conjunction with ataxia is a sign of hepatic lipidosis and a poor prognosis. A PCV in excess of 40-45% indicates dehydration. Electrolytes may be completely out of balance in severe cases.

**PREVENTION**

A common cause for gastrointestinal stasis is lack of fiber in the diet, most specifically hay. Hay is essential for normal gastrointestinal function, gut motility and dental health. A healthy diet contains hay, fresh greens, water, and pellets. Hay and fresh greens should meet energy and calcium requirements, provide crude fibers for the physiologic digestive process and adequate dental abrasions and prevent trichobezoars. Water requirements are mainly covered by drinking water and (additionally, never exclusively) fresh greens. Further, pellets and fresh greens provide vitamins and minerals. The diet should be based on 75% of roughage. In addition, animals need access to water at all the times. Water should be offered in open water bowl rather in a bottle with a nipple, but bowls should be filled and cleaned daily because they are easily contaminated. Not recommended food items include all fruits, grains and even certain vegetables with high sugar content (eg. carrots). In summary, all dietary items should have a high content of crude fiber and water should be offered ad libitum.

**REFERENCES**