

Management of Obstipation in a Four Year Old Neutered Domestic Short Hair Cat

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Abstract:

A four year old neutered male domestic short hair cat presented to Hope Veterinary Clinic in Brooklyn, New York on 9-26-2011 for evaluation of recurrent obstipation. The visit followed a 14 month history of intermittent obstipation, which was medically managed with changes in diet, subcutaneous fluids, frequent enemas, lactulose, cisapride, flaxseed oil and multiple deobstipation procedures. Radiographs the day of presentation showed a distended colon with impacted feces, and the cat was painful on abdominal palpation. The patient was treated with enemas, subcutaneous fluids, and a deobstipation procedure under general anesthesia. After the deobstipation, radiographs showed a marked decrease in colonic diameter and the amount of feces in the colon. Surgical management with a subtotal colectomy was recommended, but the owner declined due to fears over potential perioperative complications. The patient's owner elected instead to continue with medical management and pursue acupuncture as an adjunctive therapy. The pathophysiology, clinical signs, and treatment options for obstipation in cats will be discussed in relation to this case.

Introduction

Feline obstipation can occur in any cat, but is most common in middle aged male cats. Although the majority of cases occur in domestic shorthairs, Siamese cats and domestic long hair cats also appear to be over represented with respect to this condition. There are a variety of causes of constipation/obstipation in cats. These include dietary indiscretions, diet, environmental stressors, conditions causing painful defecation, conditions that cause physical blockage of feces, neurologic causes, orthopedic issues, metabolic causes, certain medications, and idiopathic megacolon. Constipation can initially be treated with medical therapy such as dietary changes, fluid therapy, and various types of laxatives, gastrointestinal prokinetic agents, enemas, and deobstipation procedures. However, when intermittent obstipation lasts for six months or longer, subtotal colectomy is the treatment of choice. The current paper suggests methods for medical management and adjunctive therapy with acupuncture for cases such as this, where surgical management is not an option.

History

The patient's first episode of constipation was on 7-16-2010. He presented for inappetance of 3 days' duration, one episode of vomiting white liquid, and standing in an arched position for 20-30 seconds at a time as though trying to move his bowels. The patient's owner was concerned since he had a history of ingesting foreign bodies (especially plastic) and thought he might have a foreign body impaction of his gastrointestinal tract. His diet at the time was Hill's dry cat food, but he was only eating 2-3 tablespoons of it a day during his episode of inappetance. He was noted to be 8% dehydrated at the time, was hunched and painful on abdominal palpation, and had no string or other foreign material in his mouth. The patient's caretaker noted only a small amount of feces in his litterbox in the four days before he was presented to Hope Vet Clinic. After a lateral abdominal radiograph did not show any obvious foreign bodies in the gastrointestinal tract, the patient was sent home and prescribed lactulose (2mL every 8-12 hours

as needed) and buprenorphine (sublingual, every 8-12 hours as needed). The patient's owner was advised that buprenorphine can cause a decrease in defecation, and told to monitor the patient and bring him back to the hospital if he did not defecate within the next two days.

The patient presented to Hope Vet Clinic on 7-25-2010 for a recheck appointment and radiograph, which showed marked improvement in colonic distention and a decrease in the amount of impacted feces. His owner had begun adding small amounts of Wellness wet cat food to the patient's diet every 4-5 hours, while maintaining him on his dry food, cat treats and lactulose.

On 10-30-2010, the patient presented to Hope Vet Clinic for a five day history of no defecation, and for not eating or drinking anything the day before presentation. The patient was noted to have vomited 3-4 times during the week before presentation. At this point the patient was being fed both Wellness wet cat food and California Gold dry cat food. The patient was allowed to roam on his owner's deck while supervised, but had not been out in several days. The patient was not given his lactulose between the last week of September 2010 and the week before presentation on 1-30-2010, when he was administered lactulose 2 to 3 times a day (3 mls per dose). A lateral abdominal radiograph showed colonic distention and impacted feces. An intravenous catheter was placed, and the patient was started on intravenous lactated ringer's solution at 15 mL/hr. He was then given a 30cc warm water enema and 2.2mg (0.2ml) of famotidine subcutaneously. He was given 40mL of a soap and warm water enema mixed with lubricant later that day. Plastic, string, and what appeared to be straw were found bound up in large fecal balls that he passed that night. The patient remained in hospital overnight, and on 10-31-10, was sedated with butorphanol tartrate (10mg/ml) (a total of 0.14 ml subcutaneously). The patient was then given meloxicam (0.3ml per os), and 1.8ml of intravenous propofol, and maintained on Isoflurane anesthesia for a deobstipation procedure. A repeat lateral abdominal radiograph was taken that showed marked improvement in colonic distention and fecal buildup, and the patient was released into the care of his owner later that day.

The patient returned to Hope Vet Clinic on 12-7-2010 for evaluation of constipation after a history of producing very little feces, having an abnormal posture (standing with an arched back) and vomiting twice. He was being treated with lactulose every 12 hours at home, and his diet (Wellness wet cat food) was being supplemented with pumpkin.

The patient was administered cisapride (5mg/mL) 0.5mls per os every 12 hours. He was given 0.28ml of buprenorphine hydrochloride and 0.02ml acepromazine, had an intravenous catheter placed, and anesthesia was induced with 2ml propofol slow IV. The patient was maintained on Isoflurane gas for a deobstipation procedure, from which he recovered uneventfully. The patient's diet was changed to Eukanuba/Iams feline Low Residue wet food (6oz cans), with instructions to feed 3-4 can twice a day.

The patient was boarded at Hope Vet Clinic until 12-31-2010, and during this time he required two enemas on 12-11-10, and subcutaneous fluids (200cc lactated ringer's solution) on 12-13-10. He also had several episodes of vomiting and diarrhoea during his stay. On 12-17-10, the patient gained access to a treat jar and ate anywhere from 1 treat to half a jar of treats.

The patient returned to Hope Vet Clinic on 1-05-11 for a lack of defecation. He was administered 200 mL of lactated ringer's solution subcutaneously, was given two warm water enemas, and was discharged after producing a large amount of stool at the hospital.

On 1-11-11, the patient's owner called Hope Vet Clinic and was told she could change the patient's Enulose from 2 ml 3x a day to 3ml 2x a day since he had begun defecating normally at the time.

On 4-02-11, the patient had a bout of voluminous diarrhea, and was taken to Hope Vet Clinic on 4-06-11 because he did not have any bowel movements between 4-2-11 and 4-6-11. The patient's owner reported that his diet had been changed to 1 can Iams Low Residue wet cat food in the morning and ¼ cup of low residue dry cat food at night, since he preferred dry food and seemed to have developed an aversion to wet cat food. The patient's owner reported that the patient had been projectile vomiting about once a month. The patient was sent home after administration of subcutaneous fluids with instructions for his owner to monitor him and bring him back to Hope Vet Clinic if signs recurred.

On 9-26-11, the patient presented for constipation after not having a bowel movement for three days. His owner noted that the last time he produced feces, it was small and hard, and that he appeared to have slightly decreased appetite and energy. At the time the patient was being treated with 1-8 teaspoon of polyethylene glycol 3350 every 24 hours, 0.5 ml flaxseed oil every 24 hours, cisapride every 12 hours (0.25ml po in the morning, and 0.5ml in the evening), and lactulose 3cc every 12 hours. He was being fed Iams dry cat food in the afternoon and Iams low residue canned cat food in the mornings. The patient is a strictly indoor cat. Upon presentation, the patient was noted to have mild dental calculus, firm stool in the descending colon on palpation, and discomfort on palpation of the colon. His physical examination, temperature, pulse and respiration were otherwise within normal limits. The patient was administered 150ml of subcutaneous fluids and sent home with instructions to return the following morning for an enema and/or deobstipation if he did not have a bowel movement overnight.

On 9-27-2011, the patient returned to Hope Vet Clinic for further treatment. A ventrodorsal radiograph of the abdomen showed distention of the colon with a large amount of feces. An enema was administered, and the patient was admitted to the hospital for monitoring and possible deobstipation under anesthesia. After several hours had passed and a bowel movement was not noted, it was determined that deobstipation was necessary. The patient was given a prophylactic dose of cefovecin sodium (0.41ml subcutaneously) to prevent absorption of bacteria and toxins secondary to expected mucosal damage during deobstipation. The patient was then premedicated using 0.1ml ketamine and 0.16ml midazolam IM and catheterized. Anesthesia was induced with 2ml propofol slow IV and maintained with Isoflurane gas. Intravenous fluids were administered, and deobstipation was performed. The patient was bright, alert and responsive after recovering from anesthesia, and was maintained on intravenous fluids at 10ml/hr in hospital overnight. The patient was offered food and water and given 0.3ml of buprenorphine intramuscularly for pain management. On 9-28-2011, another lateral radiograph of the patient's abdomen was taken, and showed marked improvement in colonic distention and a reduction in the amount of feces in the colon. An enema was administered, and the patient was released into the care of his owner later that day.

On 10-2-2011, the patient returned to Hope Vet Clinic after a 3- day history of no defecation. He was painful and uncomfortable on abdominal palpation. After radiographs demonstrated colonic distention and retained feces, the patient was administered 70cc of Lactated Ringer's Solution subcutaneously, 0.15cc of Vitamin B complex subcutaneously, 0.07cc of buprenorphine intramuscularly, and given a warm water enema. He had two bowel movements, but rectal examination demonstrated hard feces in the rectum, so he was kept overnight for monitoring and further evaluation the following day.

On 10-3-2011 the patient was given another warm water enema, 0.2mg/kg (0.17ml) of metoclopramide, and discharged into the care of his owner later that day with the following changes to his medications: cisapride: 5 mg/mL (0.5 mL every 8 hours), lactulose: 2-3 mL per os every 8 hours, and polyethylene glycol 3350 1/4 teaspoon every 12 hours, and instructions to administer an enema only if needed (if the patient did not defecate in 48 hours). The patient's owner indicated that she wanted to add acupuncture to the patient's treatment regimen as adjunctive therapy.

Diagnostics

A complete blood count and serum chemistry were within reference range. Multiple radiographs on multiple occasions during the 14 month period displayed a distended colon with impacted feces. A colonoscopy, biopsy of intestinal tissue, and evaluation of T4 levels to screen for hypothyroidism were all possible diagnostic tools that could have been performed, but medical management was selected instead.

Differentials

Of all the causes of constipation/obstipation in cats, only a few are applicable to this patient, as others were ruled out with diagnostics. Abnormal stool contents (such as plastic, string and straw in this case) and diet (dry food and changes in diet), as well as environmental changes all likely played a part in this patient's obstipation. The patient was abandoned by his owners, boarded at Hope Vet Clinic, and placed in foster care through the Infinite Hope program before finding a permanent home, all of which must have been very stressful for him. Pseudocoprostasis (matting of the haircoat around the anus leading to blockage of feces) may have occurred, as the patient was experiencing intermittent diarrhea. Dehydration was evident on presentation, and could have also played a role in the obstipation, and previous treatment with buprenorphine could have contributed as well, since opioids have been known to cause ileus. Idiopathic megacolon is a strong possibility for this cat, due to the normal bloodwork and lack of obvious neurologic and orthopedic disease.

Treatment

The patient's diet was manipulated several times to attempt to control his obstipation. He was initially fed Hill's dry cat food, and then his owner began adding small amounts of Wellness wet cat food to his meals. The patient also received various cat treats. His diet was later changed to California Gold dry cat food, and supplemented with pumpkin. At the suggestion of his veterinarian, the patient's diet was changed to Eukanuba/Iams feline Low Residue wet cat food.

Later on, the patient's owner began adding ¼ cup of low residue dry cat food at night, since the patient preferred dry food and seemed to have developed an aversion to wet cat food.

Medications that were given to the patient during his 14 months of intermittent obstipation included lactulose (changed from 2mL to 3 mL every 8 to 12 hours as needed), occasional treatments with buprenorphine when hospitalized (0.28 – 0.3 mL sublingually every 8 to 12 hours), cisapride (5mg-mL, changed from 0.25ml by mouth in the morning, and 0.5ml in the evening to 0.5mls per os every 12 hours, subcutaneous fluids (150- 200cc lactated ringer's solution multiple times when hospitalized), 1-8 teaspoon of polyethylene glycol 3350 once a day, 0.5ml flaxseed oil once a day, and multiple warm water/soap and lubricant enemas while hospitalized.

After all of these alterations in diet and medications and a continuation of the obstipation, the patient's latest treatment regimen included cisapride: 5 mg-mL (0.5 mL every 8 hours), lactulose: 2-3 mL PO every 6 hours, and polyethylene glycol 3350 1-4 teaspoon every 12 hours, and a diet of Iams/Eukanuba Low Residue wet cat food.

Discussion

Constipation is an acute or chronic condition in which defecation is infrequent, difficult or absent. It is associated with fecal retention and often with hard, dry stools. This can progress to obstipation, which is defined as extreme and persistent constipation, and is associated with blockage of the colon with hard, dry feces that cannot be passed. These conditions in cats can be associated with megacolon, which is defined as abnormal colonic dilation that may be congenital, toxic, acquired or idiopathic.

There are many causes of chronic constipation- obstipation in companion animals. Perhaps some of the most common causes are dietary indiscretions leading to abnormal stool consistency (due to garbage, bones, or in the patient's case, plastic, string and straw). Other causes include diet (dry food and inadequate water consumption by the animal can predispose them to constipation) or a change in diet. Cats in particular are very prone to stress from changes in the environment, and moving, new people or animals in the household, and changes in the routine and setup of the home can be enough to cause them to get constipated.

The litterbox itself can be of large concern when it comes to a constipated cat, as changes in location, litter, and cleanliness of the litterbox may all lead to constipation, since the cat may refuse to use the litter box. Having inadequate numbers of litterboxes in a multi-cat household, or having the litterbox in an area that is not always readily accessible, can also lead to constipation.

Other underlying health issues in cats can often lead to constipation. These include conditions causing painful defecation (such as perineal fistulas/wounds and anal sac impaction), and conditions that cause physical blockage of feces (pelvic fractures, rectocolonic stricture, perianal hernias, neoplasia, atresia ani, and pseudocoprostasis).

Neurologic causes of constipation include dysautonomia, spinal cord disease (lumbosacral), and pelvic nerve injury.

More indirect causes of constipation can include orthopedic disorders such as pelvic limb injury or joint disease that cause pain when the animal postures to defecate.

Dehydration, hypokalemia, hypothyroidism, pheochromocytomas, and hyperparathyroidism are examples of metabolic diseases that can cause constipation, so appropriate bloodwork to rule these out is essential in the obstipated cat.

Certain drugs (such as anticholinergics, antihistamines, barium sulfate used in enemas for diagnostic purposes, diuretics and opiates (such as the buprenorphine given to the patient) are known to cause constipation, and owners should be informed as such if their pets are on any of these medications.

Although the patient showed colonic distention on multiple radiographs, and has a history of obstipation, his case was treated as management of obstipation and not management of idiopathic megacolon because several other factors were noted that could be causing or adding to his constipation. Thyroid function tests were not performed on the patient, and could shed more light on what was causing his constipation if they were done and demonstrated hypothyroidism. The patient went through numerous changes in environment during his treatment at Hope Vet Clinic, as he initially came in as an animal that was surrendered by his owners (due to the fact that they were moving) and boarded at Hope Vet Clinic for some time before he was put into foster care and subsequently adopted. The patient was treated with buprenorphine several times at Hope Vet Clinic, and also had his diet manipulated many times during the course of his treatment. After his adoption, his owner (who travels frequently) hired a catsitter for the patient, and this change may also have been stressful for him. He also had at least one instance of foreign body colonic impaction, and one instance of gorging on treats while he was at Hope Vet Clinic that could have exacerbated his condition. Due to the recurrent obstipation, it was recommended that he have a subtotal colectomy performed, but his owner did not consent to this due to fears over potential complications. She opted instead to continue with medical management, and to use acupuncture to stimulate gastrointestinal motility as an adjunct.

The most common signalment for cases of feline obstipation is middle aged male cats. Although the majority of cases occur in domestic shorthair cats, Siamese cats and domestic long hair cats also appear to be over represented with respect to this condition. Constipation can initially be treated with medical therapy such as dietary changes (adding pumpkin, bran, psyllium and other fibre sources to bulk up the stool, or conversely, changing to a low-residue diet) as well as the feeding of wet food to add moisture, and discontinuation of dry food. Fluid therapy, laxatives, enemas, transabdominal palpation, manual removal of feces, and prokinetic agents form the basis for medical management of obstipation in cats. Laxatives include lubricants such as mineral oil, stimulants such as bisacodyl, emollients such as dioctyl sodium sulfosuccinate, and osmotics such as lactulose. Prokinetic agents include agents such as cisapride (a benzamide prokinetic drug) and can be used in conjunction with drugs such as ranitidine and nizatidine, which stimulate colonic smooth muscle by inhibition of acetylcholinesterase.

When medical management fails, the current surgical option of choice for obstipation is subtotal colectomy. This can involve removal of the majority of the colon along with the ileocolic sphincter, followed by ileocolonic anastomosis, or preservation of the ileocolic sphincter and

colocolonic anastomosis. Preservation of the ileo-cecal valve may reduce post-operative diarrhea by preventing bacterial overgrowth in the small intestine, and aiding in the resorption of B12 and bile salt reabsorption from the ileum.

Complications of subtotal colectomy can include tenesmus, tarry diarrhea post operatively, anorexia, depression, long-term diarrhea, colonic stricture, constipation, fecal incontinence, hematoschezia, and peritonitis.

Protracted diarrhea as a post-operative side effect can be due to malabsorption, maldigestion, small intestinal bacterial overgrowth, abnormal bile salt metabolism, or gastric hypersecretion, but post-operative diarrhea can sometimes be managed with diet change, antibiotics, antidiarrheal agents, and bile salt binders.

Successful surgery results in soft, semiformed feces, which are able to pass easily, and although there is usually diarrhea for 4-6 weeks post-operatively, the feces are usually formed and soft by 3 months after surgery. This is due to compensatory changes in the small intestine, including increased villi height and enterocyte height, and increased density of enterocytes post-colectomy. This means that in the long term, there may be a slight increase in frequency of defecation but no change in fecal volume or water content.

Acupuncture is the practice of causing a healing effect by inserting needles into specific points on the body. The American Animal Hospital Association and the American Association of feline practitioners recognizes acupuncture as a useful adjunctive treatment for pain when performed by trained individuals and with full owner consent.

Acupuncture and electroacupuncture on points on the hindlimbs of rats have been shown to induce stimulation of gastrointestinal motility mediated through vagal efferent and opioid pathways. It is known to stimulate nerves, increase blood circulation, relieve muscle spasms, release endorphins and cortisol. Acupuncture may help with gastrointestinal motility disorders by modulating these opioid pathways in cats as well. Electro-acupuncture could be used by a trained individual to increase gastrointestinal peptides, such as motilin, which can cause spontaneous rhythmic contraction in the gastrointestinal walls. Inhibition of substances such as somatostatin (which leads to gastrointestinal inhibition) can be regulated by acupuncture, while improving gastric mucosal blood flow. Some points that can be used for acupuncture to increase gastrointestinal motility include the depression lateral to the dorsal midline between the last lumbar and first sacral vertebrae, the dorsolateral surface of the pelvic limb, in the groove two cm distal and lateral to the patella, the tip of tail, the skin fold of the elbow region, caudo-ventral to shoulder, the depression lateral to the midline between the spinous processes of T11 and T12, and the depression between Ileum and the greater trochanter of femur. All of these points can be used bilaterally, except the one on the tip of the tail, and the length of treatment and number of treatments can be altered based on the response to treatment, and the temperament of the patient.

Conclusion

Although surgical management with subtotal colectomy is the gold standard for cases of obstipation lasting greater than six months, this is not always possible. Medical management

with the addition of acupuncture may prove useful in cases such as this, where surgery is not an option, either due to the animal's condition, for financial reasons, or due to the owner's wishes, but medical management alone is still not enough to prevent the need for repeated enemas and deobstipation.

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