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Clinical And Nutritional Management of Constipation in Dogs

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Definition: Constipation is defined as absence, difficulty, or infrequent defecation along with retention of fecal matter within the colon and rectum. Severe constipation can lead to obstipation when the feces become extremely hard and impacted without water or moisture content. At this stage, the expulsion becomes extremely painful (Longstreth *et al*.,2006).

Key Diagnostic Tools and Measures

Diagnosis of constipation is generally made during routine history collection and complaints by the owner while doing a physical examination of the patient. Rectal and abdominal palpation will likely reveal firm stool within the rectum and colon. Other clinical signs like anorexia, vomiting, weight loss, tenesmus, lethargy, and poor coat condition are observed commonly. Abdominal radiographs can be used for confirmative diagnosis of the extent of constipation, and to rule out foreign bodies, enlarged prostate, and pelvic or spinal lesions that may be contributing to the constipation. Complete blood count, urinalysis, serum chemistry, and thyroxine (T4), are also indicated to rule out underlying metabolic abnormalities.

Pathophysiology

When feces are retained within the colon for an extended period, water continues to be absorbed, resulting in a progressively harder and drier fecal mass leading to the clinical condition of constipation. Constipation can occur with any condition that impairs the movement of feces through the colon. Constipation can also occur secondary to rectocolonic obstruction (such as prostatic hypertrophy), medications (opioids, diuretics, others), environmental factors (confinement/ boarding inactivity), neuromuscular dysfunction, fluid and electrolyte abnormalities, ingestion of foreign material, pelvic fracture, neoplasia, diverticulum, painful defecation (anal wounds, orthopedic disorders), or inadequate water intake.

Signalment

Constipation can occur at any age in both males and females and all breeds of dogs. For example, neoplasia is more commonly seen in older animals, and prostatic hypertrophy is only seen in males. The signalment may help to narrow the differential diagnoses.

Key Nutrient Modifications

Increasing the fiber and moisture content of the diet are the key nutrient modifications that can be suggested to prevent constipation in dogs. Fiber is classified as soluble or insoluble types. Soluble fiber can hold water, which helps to increase the moisture content of dry feces and normalize gastrointestinal transit time. Some soluble fibers are fermentable which supports the growth of normal gastrointestinal flora and the production of short-chain fatty acids that provide energy to colonocytes and stimulate longitudinal colonic smooth muscle contractions. Insoluble fiber has a low ability to hold water and is not readily degraded by gastrointestinal bacteria. Insoluble fiber adds bulk to the feces and can help to stimulate colonic motility. Obstruction or partial obstruction of the colon should be ruled out prior to initiating a high-fiber diet or fiber supplementation.

Dogs with constipation may be dehydrated; therefore, increased diet moisture content can help maintain appropriate hydration status and soften dry feces. "Nutrient requirement for adult animals as determined by the Association of American Feed Control Officials.

Recommended Ranges of Key Nutrients

Nutrient	**% DM**	**g/100 kcal**	**% DM**	**g/100kcal**
	Recommended dietary level		Minimum dietary requirement	
Crude fiber	7-15	2-8	n/a	n/a

The recommended dietary composition is shown as percent of dietary dry matter (DM) and as gm or mg per 100 kcal metabolizable energy. All other essential nutrients should meet normal requirements adjusted for life stage, lifestyle and energy intake. Modified intake of these nutrients may help address metabolic alterations induced by disease states. The crude fiber analysis includes most insoluble fibers, but does not include soluble fibers. Therefore, crude fiber has limited usefulness when evaluating the total fiber content of foods. The ingredient list should be evaluated for sources of soluble fiber. Diets high in moisture may be helpful in this condition: canned foods contain about >75% water, versus dry foods which provide 10% water.

Therapeutic Feeding Principles

If the patient is prone to dehydration, feeding a canned diet or adding water to a dry kibble (two to three parts water to one part of dry Kebble) is recommended. Hydration status should be corrected prior to initiating dietary treatment. Soluble fiber increases stool moisture, while the insoluble fiber provides fecal bulk and stimulates motility. Therefore, a diet providing a combination of soluble and insoluble fiber sources is ideal for the management of constipation in dogs. Most pet foods do not report soluble and insoluble fiber levels, the ingredient list can be evaluated to gain a better understanding of the fiber types in the diet. Examples of soluble fiber include gums (such as guar gum), citrus pulp and other fruits (provide pectins), and oligosaccharides; insoluble fibers include brans (such as rice and wheat), cellulose, peanut hulls, and oat fiber; mixed fibers include soy fiber, beet pulp, pea fiber and psyllium. If the patient cannot be transitioned to a high-fiber diet, supplemental fiber can be added to the current diet. If soluble fiber is needed, guar gum (cyamopsis tetragonoloba) can be supplemented to the diet in amounts of 2-4 teaspoons per day.

If insoluble fiber is needed, coarse wheat bran can be added to the diet in amounts of 1-3 tablespoons per day.

Psyllium (plantago ovaata) is a mixed fiber supplement that can be included to the diet in amounts of 1-3 tablespoons per day (Gonzalez-Martinez *et al*.,2014).

The amount of supplementation needed to correct constipation can vary in individual patients; therefore, it is generally recommended to start at the low end of the dosage range and estimate the effect. Adjustments to the fiber dosage should be made every 5 to 7 days as needed until the desired effect is achieved.

Treats - 1 carrot = 3 kcal, 180 mg total dietary fiber (60 g/1000 kcal), 90% moisture.

½ apple with skin = 16 kcal, 750 mg total dietary fiber (47 g/1000 kcal), 96% moisture.

Fruits and vegetables are good sources of both soluble and insoluble fibers and are generally high in moisture.

Whole grains and bran cereal are also good sources of insoluble fiber. ¼ cup Minimum-Wheats 48 kcal, 1.66 g total dietary fiber (33.3 = g/1000 kcal).

Care should be taken to ensure that unbalanced treats are limited to < 10 % of the total daily calories. If feeding a high-fiber diet, additional high-fiber treats may be contraindicated. Some fiber supplements designed for human use may be sweetened. Supplements sweetened with xylitol should be avoided.

Tips for Increasing Palatability

Slightly heat food to enhance food odor and texture. Add a low-sodium chicken or beef broth to the food to increase both moisture and palatability (limit to ≤10% of the total daily calories, and avoid broths made with onion or garlic). If adding water to food to increase moisture, start by adding a small amount and then slowly increase over 1 to 2 weeks to allow the patient to become accustomed to the change in dietary moisture and texture.

Diet Recommendations - Foods providing moderate to high dietary fiber with mixed soluble and insoluble fiber sources are recommended. Canned foods and/or the addition of water to the semi-dry and dry food is recommended for patients prone to dehydration. Therapeutic foods designed

for diseases or conditions like Diabetes mellitus, colitis, and weight loss generally provide increased dietary fiber levels. In general weight loss foods will provide a greater proportion of the fiber from an insoluble source.

Pet Parent Education Points

- Confinement of the animal in a single place or lacking or allowing very little activity can contribute to constipation.
- A regular exercise routine or walking schedule is essential for avoiding constipation.
- Implementation of feeding a higher-fiber diet or adding a fiber supplement will result in increased fecal volume and frequency of defecation.
- The level of fiber supplementation needed can vary from pet to pet, so adjustments may be required to achieve the desired response.
- Proper hydration is key to the management of constipation.
- Free access to fresh water should be provided at all times. Water intake can also be enhanced by feeding canned foods or adding two to three parts waters to one part of dry kibble.
- Transitioning to a higher-fiber diet or adding a fiber supplement should be done slowly over 4 to 5 days.

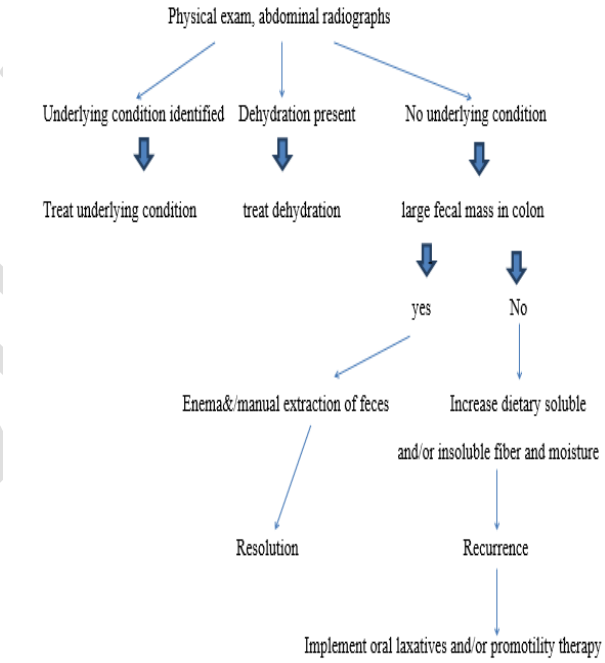
Common concurrent factors for constipation.

Conditions that cause pain on defecation (such as anorectal and orthopedic disorders), neuromuscular dysfunction (such as lumbosacral spinal cord disease or dysautonomia), or recto colonic obstruction (such as pelvic fractures or neoplasia) are commonly seen along with constipation. For disease conditions associated with colonic obstruction or partial obstruction, feeding a highly digestible diet to decrease fecal mass is more appropriate than feeding a high-fiber, fecal bulking diet which is contraindicated. In these cases, when constipation is seen with fluid or electrolyte abnormalities (such as hypokalemia or hypercalcemia) correction of the hydration status and electrolyte imbalances should take priority in the treatment plan.

Medical Management

Medical management should be aimed at eliminating or controlling any identified underlying conditions. If dehydration or electrolyte abnormalities are identified, proper fluid therapy is indicated. If a large fecal mass is present, enema treatment and/or manual extraction may be required. If dietary therapy alone is not successful in preventing recurrence of constipation, oral laxative medications can be implemented. Generally, a mild emollient laxative such as docusate sodium, or osmotic laxative such as lactulose are recommended to help for softening the stool (Gonzalez-Martinez *et al*.,2015). Promotility therapy such as Cisapride, may also be beneficial in dogs with decreased colonic motility (Jiang *et al*.,2015)

ALGORITHM OF CONSTIPATION MANAGEMENT IN DOGS



Monitoring

Response to treatment can be monitored by asking the owner to record the daily bowel movements and fecal characteristics. The success of treatment is characterized by the animal returning to regular daily bowel movements, absence of straining or pain before during or after defecation, and normal fecal consistency measured by fecal condition scoring.

References:

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