

# PROTEIN-LOSING ENTEROPATHY

## (DISEASES CAUSING PROTEIN LOSS INTO THE INTESTINAL TRACT)

### BASICS

#### OVERVIEW

- “Enteropathy” is an intestinal disease
- “Protein-losing enteropathy” is any disease process that is characterized by excessive loss of proteins from the body into the gastrointestinal tract; the “gastrointestinal tract” includes the stomach, small intestines, and large intestines
- Diseases associated with protein-losing enteropathy include primary gastrointestinal disease and generalized (systemic) disorders, such as lymphatic disease (“lymphatic” refers to vessels within the body that transports lymph, a clear to slightly colored liquid that contains white-blood cells—it serves many functions including removing bacteria from tissues and it also transports fat from the small intestines; it eventually empties into the blood, returning tissue fluids into the general body circulation) or congestive heart failure (a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs)
- Also known as “PLE”

#### GENETICS

- The hereditary nature of protein-losing enteropathy (PLE) in general or of specific underlying causes of PLE is suspected, based on an increased number of cases in specific dog breeds; however, no genetic basis has been proven so far

#### SIGNALMENT/DESCRIPTION of ANIMAL

##### Species

- Dogs and cats

##### Breed Predislection

- Breeds of dogs with an increased likelihood of developing protein-losing enteropathy compared to other breeds include the soft-coated wheaten terrier, basenji, Yorkshire terrier, and Norwegian lundehund
- Soft-coated wheaten terriers may have protein-losing nephropathy (condition in which proteins are lost from the body through the kidneys) in conjunction with protein-losing enteropathy (PLE)

##### Mean Age and Range

- Any age

#### SIGNS/OBSERVED CHANGES in the ANIMAL

- Clinical signs are variable
- Diarrhea (long-term [chronic], continuous or intermittent, watery to semisolid), weight loss, and sluggishness (lethargy) are reported most frequently; however, a significant number of dogs with protein-losing enteropathy (PLE) have normal bowel movements
- Vomiting is reported uncommonly
- Fluid build-up in the abdomen (known as “ascites”); fluid build-up under the skin of the lower part of the body and the legs (known as “dependent edema”); and difficulty breathing (known as “dyspnea”) from fluid build-up in the space between the chest wall and the lungs (known as “pleural effusion”) may be detected with markedly low levels of protein in the blood (known as “marked hypoproteinemia”)
- Thickened loops of intestine may be felt during examination of the abdomen by your pet’s veterinarian

#### CAUSES

***Lymphatic Disorders (“lymphatic” refers to vessels within the body that transports lymph, a clear to slightly colored liquid that contains white-blood cells—it serves many functions including removing bacteria from tissues and returning fluids to the circulation)***

- Intestinal lymphangiectasia; “lymphangiectasia” is defined as dilation of the lymphatic vessels in the gastrointestinal tract; the “gastrointestinal tract” includes the stomach, small intestines, and large intestines
- Gastrointestinal lymphoma; “lymphoma” is a type of cancer that develops from lymphoid tissue, including lymphocytes, a type of white-blood cell formed in lymphatic tissues throughout the body
- Nodular or mass lesions (known as “granulomatous infiltrates”) of the small intestines
- Congestive heart failure leading to increased pressure in the flow of lymph (known as “lymphatic hypertension”); “congestive heart failure” is a condition in which the heart cannot pump an adequate volume of blood to meet the body’s needs; “lymph” is a clear to slightly colored fluid that contains white-blood cells—it circulates through the lymphatic vessels removing bacteria and other materials from body tissues and it also transports fat from the small intestines; it eventually empties into the blood, returning tissue fluids into the general body circulation

***Diseases Associated with Increased Flow of Fluids Through the Lining of the Intestines (Mucosal Permeability) or Superficial Loss of Tissue of the Lining of the Intestines (Mucosal Ulceration)***

- Viral infection/inflammation of the stomach and intestines (known as “gastroenteritis”)—parvovirus and others

- Bacterial infection/inflammation of the stomach and intestines (gastroenteritis)—small intestinal bacterial overgrowth (“SIBO,” condition in which a high number of bacteria are found in the upper small intestine), salmonellosis, and others
- Fungal infection/inflammation of the stomach and intestines (gastroenteritis)—histoplasmosis and others
- Parasitic inflammation of the intestines (known as “enteritis”)—hookworms, whipworms, and others
- Inflammatory bowel disease (“IBD”)
- Adverse food reactions—food allergy, food intolerance
- Mechanical diseases of the intestines (enteropathies)—long-term (chronic) folding of one segment of the intestine into another segment (known as “intussusception”); long-term (chronic) foreign body
- Intestinal cancer—lymphoma, adenocarcinoma
- Superficial loss of tissue on the surface of the lining of the stomach or intestines, frequently with inflammation (known as “ulceration”)

### **RISK FACTORS**

- Disease of the stomach and intestines
- Lymphatic disorders (“lymphatic” refers to vessels within the body that transports lymph, a clear to slightly colored liquid that contains white-blood cells—it serves many functions including removing bacteria from tissues and it also transports fat from the small intestines; it eventually empties into the blood, returning tissue fluids into the general body circulation)
- Heart disease

### **TREATMENT**

#### **HEALTH CARE**

- In cases of severely low levels of albumin (a type of protein) in the blood (known as “severe hypoalbuminemia”) and complications due to the hypoalbuminemia, plasma transfusions or use of colloids (intravenous fluids that contain larger molecules that stay within the circulating blood, examples are dextran and hetastarch) should be considered when clinical signs from fluid build-up in tissues (edema or effusion) are severe
- Tapping the abdomen to remove excess fluid (ascites; procedure known as “abdominocentesis”) or tapping the chest to remove excess fluid from the space between the chest wall and lungs (pleural effusion; procedure known as “thoracocentesis”) in cases with problems (such as breathing difficulties) from severe fluid build-up (effusion)

#### **ACTIVITY**

- Normal

#### **DIET**

- Modified, depending on the underlying cause of protein-losing enteropathy
- A low-fat diet should be used if lymphangiectasia (dilation of the lymphatic vessels in the gastrointestinal tract) is diagnosed or highly suspected
- Elemental diets can be used in patients with severe disease; “elemental diets” are liquid diets that contain amino acids, carbohydrates, low levels of fats, vitamins, and minerals that can be absorbed without the need for digestion

#### **SURGERY**

- Low levels of albumin (a type of protein) in the blood (hypoalbuminemia) increases the frequency of postoperative complications, because of slow wound healing
- Some causes of protein-losing enteropathy (such as folding of one segment of the intestine into another segment [intussusception], long-term (chronic) foreign body, and some intestinal cancers) require surgical intervention, even in the face of very low levels of albumin (a type of protein) in the blood (hypoalbuminemia)

### **MEDICATIONS**

Medications presented in this section are intended to provide general information about possible treatment. The treatment for a particular condition may evolve as medical advances are made; therefore, the medications should not be considered as all inclusive.

- No medications are available to treat protein-losing enteropathy itself
- The underlying cause of protein-losing enteropathy must be treated; medications are selected based on underlying cause
- Medications to remove excess fluid from the body (known as “diuretics,” such as furosemide) have been used by some veterinarians to control fluid build-up under the skin (edema) and between the chest wall and lungs (pleural effusion); however, they may not work well and may be associated with side effects

### **FOLLOW-UP CARE**

#### **PATIENT MONITORING**

- Check body weight, serum albumin concentration, and evidence of recurrent clinical signs (such as fluid build-up in the abdomen [ascites], under the skin [edema], and or in the space between the chest wall and lungs [pleural effusion])

**POSSIBLE COMPLICATIONS**

- Breathing difficulty from fluid build-up in the space between the chest wall and lungs (pleural effusion)
- Severe protein-calorie malnutrition
- Diarrhea that is not responsive to medical treatment

**EXPECTED COURSE AND PROGNOSIS**

- Prognosis is guarded
- Primary, underlying disease cannot be treated in many cases

**KEY POINTS**

- “Protein-losing enteropathy” is any disease process that is characterized by excessive loss of proteins from the body into the gastrointestinal tract
- Long-term treatment usually is required; spontaneous cures are rare
- Prognosis is guarded
- Primary, underlying disease cannot be treated in many cases

