

Treating Hypoalbuminemia

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KEYWORDS

- Hypoalbuminemia • Hypoproteinemia • Albumin • Colloid osmotic pressure
- Edema

KEY POINTS

- Hypoalbuminemia is a common finding in critically ill veterinary patients and is associated with poor outcomes in many diseases.
- Specific therapy to correct low serum albumin concentration is rarely indicated and treatments are associated with high rates of adverse events.
- Treatment should focus on addressing the underlying disease leading to hypoalbuminemia. Nutritional supplementation should be considered in many cases.



Video content accompanies this article at <http://www.vetsmall.theclinics.com>.

INTRODUCTION

Hypoalbuminemia, typically defined as serum albumin concentration less than 3.0 g/dL (30 g/L), is a common complication seen in critically ill dogs and cats. There is significant interest in identifying, assessing, and treating hypoalbuminemia because it has clearly been established as a marker for disease severity and is associated with poor outcomes in many human and animal diseases.^{1–3} Unfortunately, although hypoalbuminemia may reliably correlate with disease severity, measures to directly correct serum albumin concentration have not led to improved outcomes in most situations and may even be harmful in some cases. Adverse effects of hypoalbuminemia are generally not seen until it becomes severe (<2.0 g/dL or 20 g/L).

Albumin is critical for maintenance of vascular integrity and colloid osmotic pressure. It also plays important roles in metabolism, anticoagulation, acid-base regulation, and antioxidation. In the blood, albumin is an important carrier for many endogenous and exogenous substances, and alterations in serum albumin concentration may affect pharmacokinetics and pharmacodynamics of highly protein-bound drugs. The functions of albumin should be taken into consideration when assessing any patient with hypoalbuminemia and potential complications of decreased serum albumin concentration should not be overlooked.

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PATIENT EVALUATION OVERVIEW

Hypoalbuminemia is a consequence of many different disease processes (**Box 1**). As such, patients with hypoalbuminemia present with a variety of clinical signs referable to the underlying disease but a few findings should prompt the clinician to consider low serum albumin concentration as a cause:

- Peripheral edema or pitting edema (**Fig. 1**)
- Ascites
- Pleural effusion.

These findings are not specific for hypoalbuminemia because fluid loss from the intravascular space may be caused by several other problems (**Fig. 2**). However, low serum albumin concentration as a cause or contributor should be ruled out. Many, if not most, patients with hypoalbuminemia will not have any readily identifiable

Box 1

Diseases commonly associated with hypoalbuminemia

- Liver diseases
 - Portosystemic shunts
 - Hepatitis
 - Cholangiohepatitis
 - Hepatic lipidosis
 - Hepatic neoplasia
 - Cirrhosis
- Protein-losing enteropathies
 - Inflammatory bowel disease
 - Infectious enteropathies
 - Parvoviral enteritis
 - Panleukopenia virus
 - Salmonellosis
 - Parasitism
 - Intestinal neoplasia
 - Lymphangiectasia
 - Food allergy
- Protein-losing nephropathies
 - Glomerulonephritis
 - Heartworm disease
 - Tick-borne disease
 - Bacterial pyelonephritis
 - Lupus
 - Neoplasia
 - Feline leukemia virus
 - Idiopathic
 - Glomerulonephropathy
 - Familial glomerulonephropathy
 - Amyloidosis
- Inflammatory diseases, systemic inflammatory response syndrome (SIRS)
 - Pancreatitis
 - Peritonitis
 - Pneumonia
 - Sepsis
 - Heat stroke
 - Neoplasia

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