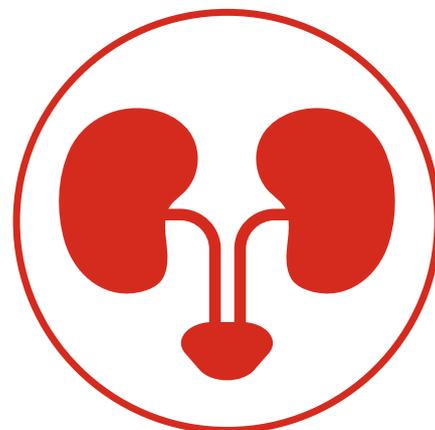




Renal & Urinary Disorders

PROTEIN-LOSING NEPHROPATHY IN DOGS AND CATS



Proteinuria can occur as a result of tubular or glomerular kidney disease in dogs or cats. However, protein-losing nephropathy (PLN) is primarily due to glomerular disease. This type of kidney disease is associated with damage to the glomerular filtration barrier and is characterized by excessive loss of protein in the urine (usually a urine protein-to-creatinine ratio (UPC) > 2.0). Although PLN is more common in canine patients, it can also occur in cats.^{1,2}

Proteinuria is associated with progression of renal disease.^{3,4} Additionally, proteinuria in dogs and cats with PLN can contribute to protein-energy wasting and malnutrition. Management of proteinuria relies on both medical and dietary interventions. The goal of nutritional modification in patients with PLN is to reduce dietary protein enough to decrease proteinuria yet avoid loss of lean body mass. Other recommended modifications include supplementing with omega-3 fatty acids, salt restriction, and monitoring potassium. Transitioning to therapeutic renal diets may be warranted, especially if progression to chronic kidney disease (CKD) occurs.^{1,2,5,6}

Key Messages

- Regular nutritional assessments and monitoring of proteinuria, body weight, and lean body mass are crucial to create a care plan that is tailored to the individual patient.
- Excessive proteinuria in patients with PLN puts them at risk for malnutrition and loss of body weight and lean body mass.¹
- Loss of lean body mass is associated with increased mortality in aging and CKD.^{7,8}
- Monitor UPC and only restrict protein as needed to reduce proteinuria.

DID YOU KNOW?

Unlike nutritional recommendations for early stage kidney disease, dietary protein restriction is recommended in dogs or cats with proteinuria.^{1,4}

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Key Messages (continued)

- After starting medical management, reducing dietary protein is recommended—as needed—to help decrease proteinuria. However, protein restriction must be based on individual medical, dietary, and health history.^{1,6} For example:
 - If the proteinuric patient is on a “regular” maintenance diet and getting high-protein treats, it may be useful to stop the treats and reassess UPC before further dietary modification.
 - If the diet is already near the minimum protein recommendation for adult maintenance, then allowing time for medical management to decrease proteinuria should be considered before further dietary protein restriction.
- Other recommended dietary modifications include:
 - Omega-3 fatty acids, which are anti-inflammatory and may be renoprotective, decreasing the progression of renal failure.⁵
 - Sodium restriction – dogs with PLN are at risk for hypertension⁹ and may be salt sensitive.
- Monitor for hyperkalemia, a potential side effect of medical management, and ensure that dietary sources do not contribute to excess potassium.¹⁰
- Monitor for progression from proteinuria to chronic kidney disease.¹⁰
 - Therapeutic renal diets may be appropriate for dogs or cats with CKD.
 - If the owner prefers a home-prepared diet to help counter a pet’s poor appetite, enlist the expertise of a board-certified veterinary nutritionist to avoid nutrient deficiencies and ensure an appropriate diet for the pet’s condition.
 - Feeding tube placement may be an option to consider if the pet will not eat enough to maintain body weight.¹

References

1. Parker, V. J. (2021). Nutritional management for dogs and cats with chronic kidney disease. *The Veterinary Clinics of North America: Small Animal Practice*, 51(3), 685–710. doi: 10.1016/j.cvsm.2021.01.007
2. Rayhel, L. H., Quimby, J. M., Cianciolo, R. E., Cl  roux, A., McLeland, S. M., & Franken, T. (2020). Clinicopathologic and pathologic characteristics of feline proteinuric kidney disease. *Journal of Feline Medicine and Surgery*, 22(12), 1219–1229.
3. Syme, H. M., Markwell, P. J., Pfeiffer, D., & Elliott, J. (2006). Survival of cats with naturally occurring chronic renal failure is related to severity of proteinuria. *Journal of Veterinary Internal Medicine*, 20(3), 528–535.
4. Vaden, S. L., & Elliott, J. (2016). Management of proteinuria in dogs and cats with chronic kidney disease. *The Veterinary Clinics of North America: Small Animal Practice*, 46(6), 1115–1130. doi: 10.1016/j.cvsm.2016.06.009
5. Brown, S. A., Brown, C. A., Crowell, W. A., Barsanti, J. A., Allen, T., Cowell, C., & Finco, D. R. (1998). Beneficial effects of chronic administration of dietary omega-3 polyunsaturated fatty acids in dogs with renal insufficiency. *The Journal of Laboratory and Clinical Medicine*, 131(5), 447–455. doi: 10.1016/s0022-2143(98)90146-9
6. Parker, V. J., & Freeman, L. M. (2012). Focus on nutrition: Nutritional management of protein-losing nephropathy in dogs. *Compendium: Continuing Education for Veterinarians*, 34(7), E6.
7. Freeman, L. M., Lachaud, M. P., Matthews, S., Rhodes, L., & Zollers, B. (2016). Evaluation of weight loss over time in cats with chronic kidney disease. *Journal of Veterinary Internal Medicine*, 30(5), 1661–1666. doi: 10.1111/jvim.14561
8. Parker, V. J., & Freeman, L. M. (2011). Association between body condition and survival in dogs with acquired chronic kidney disease. *Journal of Veterinary Internal Medicine*, 25(6), 1306–1311. doi: 10.1111/j.1939-1676.2011.00805.x
9. Grauer, G. F. (2009). Glomerulonephropathies. In R. W. Nelson & C. G. Couto (Eds.), *Small animal internal medicine* (4th ed., pp. 637–644). Elsevier.
10. IRIS Canine GN Study Group Standard Therapy Subgroup, Brown, S., Elliott, J., Francey, T., Polzin, D., & Vaden, S. (2013). Consensus recommendations for standard therapy of glomerular disease in dogs. *Journal of Veterinary Internal Medicine*, 27 Suppl 1, S27–S43. doi: 10.1111/jvim.12230

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