



Multiorgan dysfunction in a geriatric dog with congestive heart failure complicated by chronic kidney disease and uremic enteritis

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ABSTRACT: Congestive heart failure (CHF) in geriatric dogs may progress to multi-organ dysfunction, particularly affecting the renal and gastrointestinal systems. A 12-year-old male Golden Retriever presented with progressive dyspnea, nocturnal cough, vomiting, diarrhea, and weakness. Clinical examination revealed severe dyspnea with mild cyanosis. Hematology revealed mild anemia, leukocytosis, and thrombocytosis, whereas biochemistry revealed severe azotemia (urea 238.9 mg/dL; creatinine 14.85 mg/dL), indicating advanced chronic kidney disease. Thoracic radiography showed cardiomegaly with pulmonary edema, and abdominal radiography revealed intestinal gas distension, suggesting uremic enteritis. The patient received supportive care, including IV fluids, oxygen, antibiotics, and gastroprotective agents. Despite respiratory improvement, gastrointestinal bleeding persisted. The diagnosis was left-sided congestive heart failure with advanced chronic kidney disease and uremic enteritis. The prognosis was infausta. The patient was treated with four days of supportive therapy consisting of low-rate intravenous Ringer's lactate, antibiotics, gastroprotectants, vitamin B-complex supplementation, and oxygen therapy.

Keywords:

uremic enteritis, congestive heart failure, golden retriever, chronic kidney disease, cardiorenal syndrome

■ INTRODUCTION

Congestive heart failure (CHF) is a common cardiovascular disorder in geriatric dogs, causing significant morbidity and mortality (Bozkurt *et al.* 2021). In dogs, CHF primarily results from degenerative mitral valve disease or dilated cardiomyopathy, which impairs cardiac function and circulation (Keene *et al.* 2019).

Chronic kidney disease (CKD) may develop as a complication of CHF due to renal hypoperfusion and neurohormonal pathway activation, reflecting the interaction between the cardiovascular and renal systems (Savira *et al.* 2020). In advanced CKD, uremic toxins can disrupt gastrointestinal integrity, causing vomiting, diarrhea, uremic enteritis, and gastrointestinal bleeding (Summers *et al.* 2024).

Despite the recognized cardiorenal interaction in dogs, reports of concurrent CHF and CKD with uremic enteritis remain scarce in the veterinary literature. This case report describes the diagnostic evaluation and management of a geriatric Golden Retriever with multi-organ dysfunction, emphasizing the importance of an integrated approach in the management of complex diseases.

■ CASE

Anamnesis and Clinical Signs: A 12-year-old male Golden Retriever weighing 32 kg was presented to the Veterinary Teaching Hospital of Padang State University with progressive dyspnea, nocturnal cough, vomiting, diarrhea, and

generalized weakness. The dog had a one-month history of dermatological disease treated with topical and oral medications. Previous cardiovascular and renal histories were unknown, as this was the first hospital visit. **Clinical Examination:** Severe dyspnea with mild cyanosis, pale-cyanotic mucous membranes, and capillary refill time (CRT) >2 s, respiratory rate was 48–60/min and pulse rate were 140–160/min with weak quality. **Laboratory Findings:** Mild anemia, leukocytosis, and thrombocytosis. Serum biochemistry showed severe azotemia with markedly elevated urea (238.9 mg/dL) and creatinine (14.85 mg/dL) levels. **Diagnostic Imaging:** Cardiomegaly with diffuse interstitial–alveolar opacities

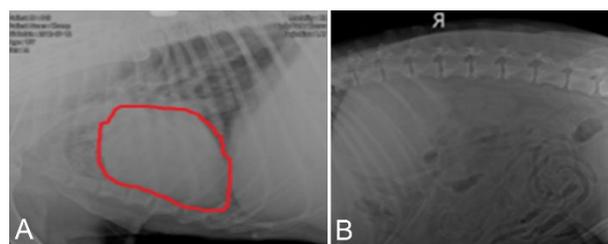


Figure 1. Radiographic images of a 12-year-old Golden Retriever. (a) Right lateral thoracic radiograph showing cardiomegaly and pulmonary edema. (b) Ventrodorsal abdominal radiograph demonstrating marked intestinal gas distension consistent with uremic enteritis.

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Table 1. Clinical observations and summary of therapy in a Golden Retriever dog during hospitalization

Time (day)	Clinical findings	Main treatment	Notes
1	Dyspnea, cyanosis, systolic murmur, and bloody diarrhea	Oxygen therapy, intravenous fluids, antibiotics, and gastroprotective agents	Condition stable, but gastrointestinal bleeding persisted
2	Dyspnea improved; patient remained weak with intermittent vomiting	Supportive therapy continued	Respiratory signs improved; appetite remained low
3	Slight improvement in activity; bloody diarrhea persisted	Vitamin supplementation added	Signs of enteritis remained evident

consistent with pulmonary edema secondary to left-sided heart failure (Figure 1). Intestinal gas distension, suggestive of uremic enteritis. **Diagnosis:** Left-sided congestive heart failure complicated by advanced chronic kidney disease and uremic enteritis. **Prognosis:** Infausta. **Management:** The patient received four days of supportive therapy (Table 1), including low-rate intravenous Ringer's Lactate (± 1.5 mL/kg/h), injectable amoxicillin followed by oral cotrimoxazole, gastroprotectants (omeprazole and molagite), vitamin B-complex supplementation, and oxygen therapy.

RESULTS AND DISCUSSION

CHF in geriatric dogs is commonly associated with degenerative mitral valve disease or dilated cardiomyopathy (McCauley *et al.* 2020). Decreased cardiac output can lead to renal hypoperfusion, causing cardiorenal syndrome and elevated urea and creatinine levels. Uremic toxins can irritate the gastrointestinal mucosa, causing impaired motility and increased permeability, leading to uremic enteritis (Wang *et al.* 2019). Histopathological changes include lamina propria edema and gastric gland atrophy (Puccinelli *et al.* 2025), while vomiting, diarrhea, and gastrointestinal bleeding are common in dogs with CKD (Pradnyani *et al.* 2021).

The differential diagnosis included gastroenteric ulceration, infiltrative enteritis, and gastrointestinal neoplasia (Bedel *et al.* 2025); however, abdominal ultrasonography and endoscopy were not performed because of the patient's instability. Supportive therapy included intravenous fluids, antibiotics, gastroprotective agents, vitamin B-complex, and oxygen therapy. Diuretics were not administered owing to severe azotemia and the risk of worsening renal perfusion (Pouchelon *et al.* 2015).

This case demonstrates complex interactions between the heart, kidneys, and gastrointestinal tract in elderly dogs. Aging reduces cardiovascular function, renal filtration, and gastrointestinal mucosal integrity (Rahbar *et al.* 2025). CHF and CKD limit therapeutic options, as interventions for one organ can worsen the other (Lombardo *et al.* 2025), contributing to poor prognosis in geriatric patients (Martinelli *et al.* 2016).

CONCLUSION

This case highlights that congestive heart failure in geriatric dogs may be accompanied by chronic kidney disease and

uremic enteritis, resulting in multi-organ dysfunction. The coexistence of these conditions complicates diagnosis and clinical management and is associated with a poor prognosis. Careful monitoring and an integrated clinical approach are essential for managing such complex cases.

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