

HOW I TREAT CONGESTIVE HEART FAILURE

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Treatment of congestive heart failure (CHF) is slightly different between acute and chronic CHF. This lecture will focus on acute management of CHF.

Triaging a patient with a complaint of respiratory distress is very important as this will determine the level of diagnostic testing that we can perform prior to starting treatment. In general, the diagnostic procedure in a dog with acute CHF requires minimal handling and to reach a macrodiagnosis (CHF vs lower vs upper respiratory vs other), in order to start treatment.

Although acute CHF management is fairly similar regardless of the underlying disease, this may result in minimal adjustments in acute CHF management and may change the risk of complications.

Acute CHF management

In general, if pulmonary oedema is moderate to severe, patient hospitalization with either furosemide IV boluses or continuous rate infusion are needed to stabilise the patient. If pleural effusion is present, thoracocentesis is recommended to ease the patient's breathing relatively quickly.

Close patient monitoring is key to success, because it can allow for mild adjustments in the treatment plan, and recognise complications early. Monitoring renal function and electrolytes derangements is also very important, because azotemia can occur due to a combination of factors, including pre-renal (low cardiac output), but also renal cause (due to medications and pre-existing conditions).

There are not many studies investigating diuretic dosing, but a general approach could be a first IV or IM injection of furosemide 2mg/kg, followed either by boluses every 2-3 hours whilst monitoring improvement in resting respiratory rate/ improvement in radiographic pattern. Depending on clinical response, the aim is then to transition to PO furosemide. Remember that some large breed dogs may normalise their resting respiratory rate quickly even though residual pulmonary oedema is still present. Continuous rate infusion of furosemide is a handy option, and you can start at 0.5mg/kg/hour and adjust (up to 1 or tapering it down). The key to CRI is not to dilute the furosemide too much, because IV fluids should not be given to these patients. No major changes are needed if the patient also has right-sided congestive heart failure with/ without left-sided congestive heart failure.

The use of pimobendan IV is a recent addition and, although no study is available, clinically valuable to improve cardiac function from the beginning in dogs with heart disease. Alternatively, if the patient is able to swallow, PO pimobendan should be considered as early as possible to improve contractility. If hypotension is present (BP below 90mmHg) or it is becoming challenging to improve congestive heart failure signs (little response to furosemide despite adequate diuretic treatment), more aggressive inotropic support is needed and dobutamine continuous rate infusion is the first choice in these patients. Dose range is 2.5-10 micrograms/kg/min. Dobutamine is a β_1 -adrenergic agonist, so it has none to negligible

vasoconstrictive properties (afterload is not increased, which would be a contraindication in a failing heart).

Side effects of this drug are associated with the fact that it can have proarrhythmic effects and that it requires continuous rate infusion due to its short effect (which can be also a protective effect if complications are observed).

The use of mechanical ventilation is not commonly performed but has been reported in dogs with degenerative mitral valve disease and severe congestive heart failure and could potentially be applied to dogs with DCM and severe congestive heart failure failing to respond to standard CHF therapy.

The use of ace-inhibitors and spironolactone are not lifesaving in the acute setting and can therefore be started once the patient is stable, for long-term management.

Chronic CHF management

Chronic management of a patient with congestive heart failure should focus on decreasing or delaying a relapse in CHF signs. Treatment is similar for dogs with degenerative mitral valve disease and should include a loop diuretic (furosemide or torasemide), pimobendan, an ace-inhibitor and spironolactone. Cases refractory to furosemide can be switched to torasemide, and if lack of clinical response is observed, sequential nephron blockade with thiazide diuretics should also be considered. This can occur with advanced DCM or if right-sided congestive heart failure occurs.

Carvedilol, a non-selective beta-blocker, was prospectively (double-blind, placebo controlled) administered for 4 months in dogs with stable congestive heart failure (no active congestive heart failure) and DCM, but no effect on cardiac remodeling or neurohormonal activation was identified within groups, so it is currently not recommended.

Dietary sodium restriction and the supplementation of omega-3 fatty acids can help, as well as maintaining adequate protein intake. The supplementation of L-carnitine is less strongly advised but could be considered.

Optimal long-term management of patients with DCM should include regular rechecks and visits to allow for micro-management and adjustments. Home measurement of resting respiratory rate, as well as girth measurement for dogs with right-sided CHF are effective monitoring strategies that should prompt owners to seek veterinary advice early. Serial rechecks and visits can be considered depending on clinical response, but in general can be considered every 3 months (or earlier if needed) if the patient is stable.

References

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