

Surviving Acute Respiratory Distress in Cats

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Cats in respiratory distress are a common clinical problem in small animal practice, and they require a careful approach to diagnostics and therapy. They present unique challenges because the situation is often emotional for owners and the cat is often very unstable and easily decompensated by transport to the clinic and handling after arrival. Given this, initial interventions and handling must be kept to a minimum, so a thoughtful approach is important. There are many possible etiologies, such as trauma, congestive heart failure (CHF), pleural space disease, lower airway disease, and laryngeal disease.

Initial Approach and Stabilization

- Procedures such as getting a medical history may have to be delayed for a short time, or an initial brief history collected by a nurse/technician. An initial cost estimate and consent form should include examination, supplemental oxygen, radiographs and/or ultrasound, thoracocentesis, and drug therapy.
- Initially, intravenous (IV) access and blood sampling for diagnostics are contraindicated in the unstable patient.
- Supplemental oxygen should be provided as soon as the patient arrives at the vet clinic; oxygen cage or flow-by are acceptable options for cats.
- Many patients will benefit from light sedation with butorphanol (0.2-0.4 mg/kg, IM, SC) +/- acepromazine (3-5 µg/kg, typically just enough to fill the hub of the needle).
- The respiratory pattern should be carefully observed to help create an initial differential diagnosis list (Table 1).
- Respiratory fatigue can occur and may quickly lead to respiratory failure quickly. Cats with orthopnea (sternal recumbency with extended neck and abducted elbows) or persistent open mouth breathing are very unstable. Everyone working with the cat should be alerted to minimize handling and stress, and equipment for endotracheal intubation and cardiopulmonary resuscitation should be at hand.

Physical Examination

- A physical examination should only be performed once the cat is stable and calm. It should be carried out in a low stress environment with gentle handling. The minimum examination includes:
 - Observation of respiratory rate and pattern
 - Mucous membrane color and capillary refill time
 - Heart rate, rhythm, and sounds
 - Lung auscultation

Diagnostic Tests

- There are many possible causes of acute respiratory distress, such as trauma, congestive heart failure (CHF), pleural space disease (e.g., hemothorax, pyothorax, pleural effusion, diaphragmatic hernia, trauma, etc.), lower airway disease (e.g., asthma), and laryngeal disease.
- Thoracic ultrasonography is most useful for cats with restrictive, paradoxical, or mixed patterns (or when the clinician is unable to categorize the pattern). Ultrasound can be performed with minimal disruption of the patient, often cage-side with ongoing oxygen supplementation and in sternal recumbency and so is less stressful than radiography when available.

- Radiography can be very stressful for the dyspneic cat and may cause decompensation. It is best reserved for situations where ultrasound is not immediately available and where a tentative diagnosis cannot be reached using observation of the respiratory pattern, physical examination, and thoracocentesis. It should only be performed when the cat is stable enough to tolerate the procedure.
- Thoracocentesis is both a diagnostic and therapeutic procedure. It can provide rapid benefit to the patient with pleural fluid. Thoracocentesis can be performed without sedation in many cats; anxious cats can be sedated with butorphanol (0.2-0.4 mg/kg, IM, SC).
 - Fluid is drained as completely as possible; samples are saved in EDTA and plain tubes for fluid analysis, cytology, and culture. A fresh, air-dried smear should also be made to avoid artifactual changes in the cells. If enough fluid is present, a sample can also be obtained in EDTA for cardiac biomarker measurement (NTproBNP).

Empiric Treatment

- Initial assessment, imaging, and thoracocentesis should help rule in or rule out pleural space disease. Once pleural space disease has been ruled out, the most common causes of respiratory distress in cats are CHF, lower airway disease, and neoplasia.
- Lower airway disease should be suspected in cats with an obstructive respiratory pattern, and empirical treatment should be considered to stabilize the cat and facilitate radiography.
 - Lower airway disease would be very unlikely in patients with a restrictive respiratory pattern or pleural effusion.
 - Empirical treatment includes a bronchodilator (inhaled salbutamol/albuterol or injectable terbutaline 0.01 mg/kg IV, IM, SC) and an anti-inflammatory dose of corticosteroids (dexamethasone sodium phosphate 0.125-0.5 mg/ IV, IM).
- Cardiac disease or neoplasia may be suspected in cats with restrictive or paradoxical respiratory patterns, pleural effusion that is a modified transudate, and/or where ultrasound has not revealed a diagnosis.
 - The easier of the two possibilities to rule out is CHF. Cardiac disease is highly suspected in cats with a gallop sound or arrhythmia.
 - Two tests are useful: focused assessment by ultrasound of left atrial size and measurement of NTproBNP in pleural fluid or blood.
 - Empiric treatment for cats with suspected or confirmed CHF includes thoracocentesis (if pleural effusion is present) and furosemide (2-4 mg/kg IV, IM, SC).

Summary

- Acutely dyspneic cats need careful handling as soon as they arrive at the veterinary hospital.
- Care and diagnostics must be prioritized in a logical manner.
- Focused patient-side ultrasound techniques can be very useful if available.
- Thoracocentesis can be used for diagnostic and therapeutic purposes.

Table 1: Respiratory distress patterns in cats

| | Description | Localization | Common causes | Diagnostic tests to consider |
|--------------------|--|---|---|--|
| Inspiratory | Long, slow inspiratory phase, often accompanied by stridor (harsh, high-pitched sound) | Upper respiratory tract | Nasopharyngeal obstruction (polyp, foreign body) Laryngeal obstruction (mass lesion, paralysis) | Upper respiratory tract visualisation under sedation or anesthesia and imaging |
| Restrictive | Rapid, shallow pattern with even effort on inspiration and expiration | Pleural space, lungs | Pleural fluid (effusion, hemothorax, pyothorax) Pneumothorax Pulmonary edema (CHF) | Thoracic ultrasonography |
| Obstructive | Near-normal rate with disproportionate expiratory effort, often involving an expiratory abdominal push | Lower airway disease | Lower airway obstruction (chronic bronchitis, asthma) | Thoracic radiography or computed tomography (CT) |
| Paradoxical | Caudal thorax and cranial abdomen move in opposite directions during both phases, often fast rate | Non-specific; represents respiratory fatigue Common in pleural space disease | Pleural space disease Pulmonary edema (CHF) Lower respiratory tract disease Ruptured diaphragm | Thoracic ultrasonography |
| Panting | Paroxysmal: open mouth, rapid, short, shallow breaths | Non-specific; may not represent true respiratory distress if respiratory pattern is normal between episodes | Stress | Dependent on other clinical findings |

For more information, see:

Differentiating types of respiratory distress in cats (YouTube video by Dr. Elizabeth Thomovsky):

https://youtu.be/Vvw_GUSNJJM