



## Anesthesia for Invertebrates: Mollusks, Millipedes, & More

Analgesia of invertebrates (eg, mollusks, arachnids, crustaceans, insects, echinoderms) is a controversial and neglected topic because of the belief that they may not feel pain. The issue may be in differentiating nociception from pain; nociception describes the neurophysiologic components leading to pain sensation but not the central perception of the input leading to pain sensation. By strict definition, pain is a subjective experience resulting from nociception and occurs in the cerebral cortex. Whether invertebrates perceive pain and suffer emotional stress remains uncertain. The discovery of nociceptive pathways like those in vertebrates has challenged previous beliefs; even without a CNS, nociceptive cells and responses can be present and opioid systems can have a functional role in invertebrate nociception.

Until pain in invertebrates can be definitively determined, analgesics (preferably inhaled agent) should be administered to any patient subjected to painful procedures, noting that some drugs used for invertebrates may have muscle-relaxing properties but lack anesthetic potency. Because insensitivity to painful stimuli only lasts as long as the animal is anesthetized, administration of

analgesics would be advisable if the procedure is associated with significant postoperative pain. Diluted lidocaine may be used for topical analgesia above a surgery site.

### Commentary

Invertebrates represent a diverse group of animals used in biomedical research and held in zoos, aquariums, and increasingly as pets. Veterinary science is still far from understanding the anatomy, physiology, and pathophysiology of invertebrate species. Because data are lacking, this article provided an outstanding overview of anesthesia and analgesia relating to this group. As advocates for the health and well-being of all animals, veterinary professionals must be aware of the need for appropriate analgesia and methods of anesthesia for this group.—*Anthony Pilny, DVM, DABVP*

### Source

Clinical anesthesia and analgesia in invertebrates. Lewbart GA, Mosley C. *JEXOTIC PET MED* 21:59-70, 2012.

## Spontaneous Pneumothorax in Cats

**FOCUS:**  
Emergency/Critical Care

While pneumothorax can be caused by trauma, the most common causes of spontaneous pneumothorax in dogs include neoplasia, heartworm infection, lung abscesses, pulmonary thromboembolism, congenital lobar emphysema, grass awn migration, bacterial pneumonia, parasitic or mycotic granuloma, and uremic pneumonitis. In this retrospective study, medical records of 303 cases of feline pneumothorax were identified: 155 resulted from trauma, 118 occurred postthoracocentesis, and 35 were considered spontaneous, for which the most common sign was acute onset of respiratory distress. Ten cats had a history of cough and 4 were found collapsed. All cats had increased respiratory rate and effort. Abnormal lung sounds were present in 22 cats; 9 had harsh or increased bronchovesicular sounds, and lung sounds were absent in 5 cats. Diagno-

sis was made via radiography; pneumothorax was bilateral in 23 cats and unilateral in 7. Five underlying diseases were found in 21 cats: inflammatory airway disease ( $n = 9$ ), neoplasia ( $n = 5$ ), heartworm disease ( $n = 3$ ), pulmonary abscess ( $n = 3$ ), and lungworm disease ( $n = 1$ ). Nineteen cats were discharged, 4 died, and 12 were euthanized. Treatments varied and included 16 managed with observation, 12 with thoracocentesis, 2 with indwelling thoracostomy tubes, and 5 with surgical intervention.

### Commentary

Whereas superior outcome of surgical management in canine spontaneous pneumothorax has been demonstrated, this study suggested that nonsurgical treatment can be successful in feline spontaneous pneumothorax. The decision to manage any disease with medical or surgical thera-

pies should be based on scientific evidence. The underlying cause of pneumothorax in cats is often undetermined, and no clear recommendations can be made on the need for surgical therapy. Thoracocentesis should be considered for cats with pneumothorax in order to improve respiratory effort. If negative pressure cannot be obtained during thoracocentesis, or if pneumothorax returns shortly after completion, thoracostomy tubes should be used. If pneumothorax does not resolve, surgical exploration of the thorax may be warranted.—*JD Foster, VMD*

### Source

Spontaneous pneumothorax in 35 cats (2001-2010). Mooney ET, Rozanski EA, King RG, Sharp CR. *J FELINE MED SURG* 14:384-391, 2012.