Tympanometry: We’re All Ears

Examination of the tympanic membrane, bullae, and Eustachian tube can be difficult without advanced imaging. Tympanometry is a noninvasive way to examine middle ear functionality through measurement of reflected sound energy with varying atmospheric pressure applied in the external ear canal. Tympanometry, also known as impedance audiometry, is widely used in human medicine but previously has been too costly for widespread veterinary use. This study evaluated the feasibility of using a lower-cost handheld tympanometer in conscious dogs (n = 16) to evaluate the tympanum. These dogs showed no evidence of otitis before testing. With each dog in a standing position, ears were cleaned, then a handheld tympanometer probe tip with an extender adapter was placed into the vertical canal to create a seal. Of 16 dogs, 13 allowed both ears to be examined, 2 only allowed 1 ear to be examined, and 1 dog resisted examination of both ears. Repeated otoscopic examinations confirmed no evidence of otitis in the 3 resisting dogs. Peak compliance pressure, gradient, and ear canal volume were measured. Repeated tests in compliant dogs showed good repeatability. Future studies of dogs with otic disease are needed to confirm the clinical utility of this device.

Commentary
It can often be difficult to diagnose otitis media in a dog, and not every client can afford a CT scan. Tympanometry may be the tool we need to evaluate the middle ear without advanced imaging. Although this study demonstrated that most dogs tolerate it, the technique has not yet been validated as a means for differentiating dogs with otitis media vs otitis externa. If the authors are able to demonstrate this in future research, it offers significant promise.—William Oldenhoff, DVM, DACVD

Source

Viral Co-infection in Bacterial Pneumonia

Bacterial pneumonia (BP) is caused by bacterial infection and has a complex pathogenesis. This study investigated the role of respiratory viral infection in canine BP. Client-owned dogs diagnosed with BP (n = 20) were included in this prospective observational study. Dogs diagnosed with Bordetella bronchiseptica tracheobronchitis (n = 13) and showing signs for >30 days served as controls for virus analysis. Thoracic radiographs, hematology, serum chemistry, serum C-reactive protein, blood gas analysis, and fecal analysis were performed on all dogs. Airway samples were collected via bronchoalveolar lavage or transtracheal wash for cytology, aerobic and anaerobic culture, Mycoplasma spp culture, and PCR analysis. PCR screening was conducted for canine parainfluenza virus (CPIV), canine adenovirus type 2, canine herpesvirus, canine respiratory coronavirus (CRCoV), canine influenza virus, canine pneumovirus, canine distemper virus, Mycoplasma spp, and B bronchiseptica. In dogs with BP, CPIV and CRCoV were detected in 7/20 and 1/20 of dogs, respectively. Respiratory viruses were not detected in control dogs. Dogs with bacterial and viral co-infections were significantly heavier and tended to be younger—although not statistically significant—than those without viral co-infection. Clinical findings, arterial blood gas analysis, hematology, and respiratory sample cytology did not differ significantly when BP was accompanied by viral infection, which suggests that viral co-infection did not increase illness severity. Respiratory viruses, primarily CPIV, may play a role in BP pathogenesis but do not necessarily affect clinical course.

Global Commentary
Airway samples from dogs with suspicion of BP should be submitted for PCR (ie, B bronchiseptica, Streptococcus equi, Mycoplasma spp) and bacterial culture susceptibility testing. However, viral PCR screening should not be routinely performed. In fact, based on these findings, respiratory viruses might predispose to development of secondary bacterial infections; however, they are usually self-limiting and of minor clinical relevance. Treatment includes supportive care (eg, oxygen therapy, sterile saline nebulization followed by coupage, mucolytics, bronchodilators, IV fluids) associated with antimicrobials (chosen on susceptibility testing of isolates or empiric treatment based on positive PCR results). Vaccinations are available for some causal agents to limit infection severity. Prevention strategies should be planned in shelters to decrease morbidity and ease of transmission.—Alice Tamborini, DVM, MRCVS, DECVM-CA (Internal Medicine)

Source

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