

Amoxicillin/Clavulanic Acid in Cats with & without Chronic Kidney Disease

Margie Scherk, DVM, DABVP (Feline Practice)

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In the Literature

Benson KK, Quimby JM, Dowers KL, et al. Pilot study of side effects and serum and urine concentrations of amoxicillin–clavulanic acid in azotemic and non-azotemic cats. *J Feline Med Surg*. 2019. doi: 10.1177/1098612X19881537

FROM THE PAGE ...

Chronic kidney disease (CKD) occurs in 30% to 40% of cats >10 years of age,¹ with 20% to 30% of these cats experiencing UTIs of either the lower or upper urinary tract.² Amoxicillin/clavulanic acid is commonly used in these patients. In humans with CKD, alterations in serum and urine concentrations of amoxicillin as well as clavulanic acid affect dose recommendations for this drug.^{3,4}

The first part of this study evaluated whether cats with azotemic CKD (azCKD) experienced increased adverse effects from amoxicillin/clavulanic acid as compared with cats without azCKD. Owners of cats that had been prescribed amoxicillin/clavulanic acid for any reason were surveyed. The results of the 61 returned surveys—representing 11 cats with azCKD (9 in IRIS stage 2) and 50 cats without azCKD—showed no significant difference in the prevalence of adverse effects, including vomiting, diarrhea, and decreased appetite. However, a significantly greater number of cats with azCKD experienced >1 adverse effect; clinicians were also more likely to adjust the treatment plan (eg, discontinue the antibiotic) in these patients as a result of these adverse effects.

The second part of this study determined the serum and urine amoxicillin and clavulanic acid concentrations in 6 cats with azCKD (5 in IRIS stage 2, 1 in IRIS stage 4) and 6 without azCKD that were receiving amoxicillin/clavulanic acid. Similar to humans with CKD, cats with azCKD trended toward higher serum concentrations of amoxicillin but had significantly lower urine concentrations of amoxicillin than did cats without azCKD. No significant difference was seen in clavulanic acid concentrations in either serum or urine, although the azCKD group trended toward higher serum levels.

These results should not be overinterpreted, as the study population size was small and the severity of CKD was restricted to those showing consistent elevations in creatinine, low urine-specific gravity, and ultrasonographic changes suggestive of renal disease. Conversely, these results should not be underestimated, as there were no cats in IRIS stage 3 and only 1 in stage 4 in this study population.

... TO YOUR PATIENTS

Key pearls to put into practice:

- 1** The lower end of the dose range should be used for amoxicillin/clavulanic acid for CKD patients with systemic conditions.
- 2** Although urine concentrations of amoxicillin may be lower, there is sufficient amount of the drug excreted in the urine for treatment of lower urinary tract disease in cats with early stages of CKD.
- 3** Adverse reactions to amoxicillin/clavulanic acid may be more common in cats with CKD and should be anticipated.
- 4** As with any decision to prescribe an antibiotic, it is critical the drug be effective against the infecting organism. To provide effective therapy and reduce the chance of antimicrobial resistance development, culture testing should be performed. When culturing is not feasible, amoxicillin without clavulanic acid is a reasonable first choice for sporadic or recurrent bacterial cystitis, depending on geographic sensitivity patterns.⁵

References

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Research Note: Photobiomodulation Therapy Protocols in Dogs with Degenerative Myelopathy

Canine degenerative myelopathy is a progressive, adult-onset neurodegenerative disease characterized by pelvic limb proprioceptive ataxia that progresses to paraparesis, then paralysis of the pelvic limbs, followed by thoracic limb paralysis. Treatment is limited to palliative therapy due to the lack of effective treatment options. This retrospective study evaluated the effect of 2 photobiomodulation therapy protocols on the progression of clinical signs of degenerative myelopathy. All dogs received the same twice-weekly in-clinic rehabilitation therapy and at-home exercise program. In addition, during in-clinic therapy, dogs received either photobiomodulation therapy protocol A (PTCL-A; $n = 6$) or photobiomodulation therapy protocol B (PTCL-B; $n = 14$). Results in the PTCL-B group showed significantly longer times between signs of onset and euthanasia as well as between signs of onset and nonambulatory paresis or paralysis as compared with the PTCL-A group; Kaplan-Meier survival analysis also demonstrated significantly longer time of clinical sign onset to nonambulatory paresis in the PTCL-B group as compared with the PTCL-A group and historical data group. These results suggest there may be potential benefits of using PTCL-B in combination with an intense rehabilitation therapy plan in dogs with degenerative myelopathy. A randomized, double-blinded placebo control prospective clinical trial is underway.

Source

Miller LA, Torraca DG, De Taboada L. Retrospective observational study and analysis of two different photobiomodulation therapy protocols combined with rehabilitation therapy as therapeutic interventions for canine degenerative myelopathy. *Photobiomodul Photomed Laser Surg.* 2020;38(4):195-205.