Emerging Therapies for AKI in Dogs

Acute kidney injury (AKI) occurs in 12% of dogs with naturally occurring abdominal sepsis. Mortality is high, with only 14% surviving to hospital discharge. The mechanisms and early indicators of impending AKI are yet to be elucidated. The article is a review of the current understanding of sepsis-related AKI in humans and dogs, with suggestions of how advances on the human side may be applied to veterinary patients.

An important advancement in AKI research in humans was the development of the RIFLE (risk, injury, failure, loss of kidney function, end-stage kidney disease) scheme, an international consensus grading system for renal injury. This has allowed for greater elucidation of AKI epidemiology and associated healthcare costs in human beings. AKI results from a combination of the initial insult, with activation of inflammation and coagulation. Ischemia and reperfusion injury may not be as important a mechanism in AKI as was originally thought. Furosemide and N-acetylcysteine do not appear helpful, and hydroxyethyl starches and dopamine may be detrimental. Sepsis-induced molecules may serve as early urinary biomarkers for AKI, arising before creatinine increases and urine output decreases are detected. On the veterinary side, the International Renal Interest Society (IRIS) classification scheme shows promise. More research and clinical trials are needed to develop evidence-based recommendations for AKI in dogs.

Global Commentary

In humans, AKI is considered a public health problem, with increasing incidence and morbidity and mortality rates that have not changed substantially in the past 30 years. In veterinary medicine, the picture seems similar. Epidemiological data corroborates the common feeling among veterinarians that, once an animal develops intra-hospital AKI, the possibility of survival to hospital discharge decreases exponentially. We have always relied on serum creatinine measurement to diagnose AKI, despite its known limitations. In recent years, new and exciting developments in diagnosis, staging, and therapy of AKI have occurred. In this paper, the clinician is introduced to new concepts in AKI staging, and recent breakthroughs in elucidating sepsis-associated AKI pathophysiology and new diagnostic and therapeutic developments. The authors’ approach helps the reader put in perspective what has been done in different species and choose what can be applicable for their own patients. The section about AKI biomarker use demonstrates the potential to revolutionize clinical approaches.

Although many steps have been taken, there is a long way to go before we can manage AKI effectively. However, this paper will leave readers with a feeling of hope because a new, exciting world of diagnostic tests and emerging therapies is becoming available. For the first time in many years, that there are several potential options to deal with this condition.—Nuno Manuel Félix, DVM, MD, MSc, Resident in Paediatrics


Source