Assessing Heatstroke Prognosis

Heatstroke in dogs is a severe syndrome characterized by core body temperatures >41°C (105.8°F) and CNS depression or seizures. It can be caused by exposure to extreme environments or strenuous physical exercise. The medical records of 126 dogs treated for heatstroke were reviewed to develop a scoring systemic to help assess disease severity and prognosis. Logistic regression analysis was used to assess clinical data from the first 24 hours of hospitalization to determine which were associated with outcome. In the second analysis, multivariable logistical regression was used to determine sensitivity, specificity, and optimal cutoff points. Overall mortality rate was 53%. Clinical signs positively associated with mortality included acute collapse, petechiae, changes in mental status, and seizures. The presence of shock was also a negative predictor. Coagulation abnormalities and disseminated intravascular coagulation were signs of severe disease. Higher scores in the scoring system developed by the authors corresponded to lower probability of survival. Models used by the authors were deemed comparable in accuracy to those used for assessing critical illness in humans. Although the scoring system should not be used as the sole predictor of outcome, it can be used early in the hospitalization of dogs with heatstroke and to help assess disease severity.

Global Commentary
Heatstroke is a common condition with reported mortality rates from 50%-64%. The authors used a data set from 126 dogs with naturally occurring heat stroke over a 9-year period. Logistic regression and multivariate analysis were used to create a scoring system model that used patient information such as: presence of acute kidney injury; presence of disseminated intravascular coagulation; heart rate; and body condition score. The model predicted mortality with 83% sensitivity and 81% specificity in their population. Two important limitations: 1) any predictive model is intended for large populations, and application to individual patients must be approached cautiously; 2) the model should be further validated by application on a different (ideally prospective) population of dogs with heatstroke.—Jonathan Bach, DVM, DACVIM, DACVECC

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