HEAT STRESS IN RACING DOGS

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Introduction

This paper will outline the findings of the first phase of a three year prospective study of racing greyhounds in South Australia which aims to elucidate factors which influence the risk of greyhounds suffering from significant heat strain under high environmental temperatures.

Greyhound Racing

Greyhound racing is conducted in all the States and Territories of Australia and race meetings are held throughout the year. In recent years, the number of race meetings conducted during the day has increased significantly, which means that greyhounds are frequently transported and raced in very hot conditions. The controlling authorities in the Greyhound industry are committed to ensuring the welfare of greyhounds and the States and Territories have implemented a variety of policies regarding racing in hot weather. However these have been formulated without any validated evidence and variation exists between jurisdictions.

Heat Stress/Heat Strain/Heat Stroke

Environmental heat stress is widely recognised as a risk for domestic dogs. *Heat Stress* is the term used to describe the environmental or metabolic factors impacting on the body whereas *Heat Strain* describes the physiological or pathological effects resulting there from. *Heat Stroke* is the most severe form of heat induced illness. A retrospective study carried out by Bruchim *et al.* (2005) of 54 cases of heat stroke revealed that 63% of the cases were exertional heat stroke, in dogs which had exercised for periods of 6-300 minutes. Retrospective studies on dogs presented at veterinary clinics for treatment of heat induced illness identify a body temperature rise of two degrees or more to be a critical factor in precipitation of heat stroke and have shown that even with intensive supportive therapy the mortality rate of affected dogs is fifty percent Bruchim *et al.* (2005). Following the sudden deaths of eight male greyhounds in Phoenix, Arizona, Bjotvedt *et al.* (1984) carried out a limited study on the effects of strenuous exercise on greyhounds racing over 503 metres in environmental temperatures of 42°C at relative humidity of 19%. Mean post-exercise rectal temperatures increased by 3.6°C.

Mc Nicholl J, Heat stress in racing dogs.
Proceedings of the 3rd AVA/NZVA Pan Pacific Veterinary Conference, Brisbane 2010
PH46b.1

Results to Date

Mindful of the time constraints in the conduct of race meetings, a rapid and non-intrusive method of measuring body temperature was considered essential. The ideal would be a non-contact device which would provide an instant read out from a distance. A comparative study utilising three devices, a standard clinical rectal thermometer, a veterinary aural thermometer and a hand held infra red 'gun' type thermometer, to measure body temperature, was conducted on 100 greyhounds in their home kennels. Measurements utilising the rectal and aural thermometers corresponded closely (average 38°C, 37.9°C, respectively) although the efficacy of the aural thermometer was affected by operator error, small amounts of dirt in the ear or patient resistance. The temperatures recorded by the infra red thermometer, directed to the skin overlying the femoral artery, were significantly affected by the density of hair covering.

In ambient temperatures ranging from 23.0°C to 34.9°C and utilising aural and rectal thermometers, pre- and post- exercise body temperatures of 29 greyhounds participating in races and trials have been recorded. Average body temperature increases of 2.5°C (aural) and 2.6°C (rectal) with maxima of 42.9 °C and 43°C, respectively, have been found.

Urinalysis

Pre- and post-exercise urine samples from 24 dogs have been screened using Multistix10 SG. Of the post-exercise samples, results for blood have been 9 strong positive, 6 low positive and 9 negative. Two of the blood positive samples also had positive leukocyte readings suggestive of urinary tract infection. Further analysis to determine if the blood positive samples contain haemoglobin or myoglobin will be performed.

References

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Bruchim, Y., Klement, E., Saragusty, J., Finkeilstein, E., Kass, P. & Aroch H, I. (2006) Heat stroke in dogs: A retrospective study of 54 cases (1999-2004) and analysis of risk factors for death. *Journal of Veterinary Internal Medicine,* 20**,** 38-46.