

A study to understand the cause of CRGV “Alabama Rot” in dogs

My background

Hello, my name is Jack Whitehouse, I am a new researcher at the University of Surrey (UoS). Prior to starting at the UoS I studied for a BSc (Hons) degree in Human Bioscience at the University of Northampton. Through my undergraduate studies, I found a passion for microbiology, pathology and disease. These interests took me to the University of Birmingham to study for a MRes in Molecular and Cellular Biology. Over the course of my University studies I focused on microbiology. Studying microbiology has made me more passionate about understanding the biology of disease and the mechanisms that drive them. Through a combination of passion, personal interest, and persistence I now find myself studying for a PhD at the University of Surrey focused on CRGV, a devastating disease affecting dogs. This project resonates with me as a dog owner and because it causes unnecessary suffering. Therefore, research into the cause, its effects and potential risk factors is essential to preventing future cases of the disease.

What is CRGV?

Canine cutaneous and renal glomerular vasculopathy (CRGV) is a disease with an unknown cause. CRGV was first reported in the 1980s in the United States of America affecting greyhound dogs and has since been reported in the United Kingdom in a variety of breeds (Hertzke *et al.*, 1995; Stevens *et al.*, 2018). Since 2012 there have been 242 reported cases with ~90% of dogs that develop kidney disease dying. CRGV is characterised by, but not limited to, cutaneous/skin lesions or sores around the bottom part of the dog’s legs, muzzle, ventrum and tongue (Holm *et al.*, 2015). While the underlying cause of this disease remains unknown, there is a distinctive seasonal pattern with 90% of cases being reported between November and May.

The Project

The University of Surrey and Anderson Moores Veterinary Specialists have joined efforts to deliver a Doctor of philosophy (PhD) project entitled “The role of the microbiome and circulating endothelial cells in the pathobiology of cutaneous renal glomerular vasculopathy (CRGV)”. I will be carrying out this research project under the supervision of Professor Roberto La Ragione, Professor Mark Chambers from the University of Surrey and Mr David Walker and Mrs Laura Holm from Anderson Moores Veterinary Specialists.

The project is designed to improve our understanding of what happens during disease progression and to potentially identify the cause of CRGV. Firstly, we wish to understand changes to the gut microflora (bugs in the intestine) that occur during CRGV infection. This will not only help us to understand what constitutes a healthy gut in dogs, but also help us to identify variances which could be indicative of CRGV. Secondly, we need to understand the metabolic and cellular changes in body fluids that may be associated with CRGV and determine if these could be used as diagnostic markers for the development of a potential test for CRGV. Metabolic needs fluctuate during disease progression and studying these variations in context to CRGV may improve our understanding of the disease mechanisms. Lastly, we want to know if the presence of circulating endothelial cells could be used as predictors of CRGV. Understanding the factors that contribute to disease progression may aid treatment and therapeutic monitoring decisions.

References

Stevens, K.B., O’Neill, D., Jepson, R., Holm, L.P., Walker, D.J., and Cardwell, J.M. (2018) ‘Signalment risk factors for cutaneous and renal glomerular vasculopathy (Alabama rot) in dogs in the UK’, *Veterinary Record*, 183 (14), pp. 448. doi:10.1136/vr.104891.

Holm, L.P., Hawkins, I., Robin, C., Newton, R.J., Jepson, R., Stanzani, G., McMahon, L.A., Pesavento, P., Carr, T., Cogan, T., Couto, C.G., Cianciolo, R., and Walker, D.J. (2015) ‘Cutaneous and renal glomerular vasculopathy as a cause of acute kidney injury in dogs in the UK’, *Veterinary Record*, 176 (15), pp. 384. doi: 10.1136/vr.102892.

Hertzke, D.M., Cowan, L.A., Schoning, P., and Fenwick, B.W. (1995) ‘Glomerular Ultrastructural Lesions of Idiopathic Cutaneous and Renal Glomerular Vasculopathy of Greyhounds’, *Veterinary Pathology*, 32 (5), pp. 451–459. doi:10.1177/030098589503200501