PUG DOG ENCEPHELITIS (PDE) NEWS FLASH!!! - RECENT UPDATE ON PDE

Targeted efforts have been made since the last report towards summary and detailed data analysis and correlation for publication. Additionally, we have continued our efforts to collect additional samples from unaffected Pugs who are unrelated to Pugs having had PDE. The first published manuscript, "Epidemiology of necrotizing meningoencephalitis in Pug Dogs" has been published in the highly esteemed, peer-reviewed journal, Journal of Veterinary Internal Medicine (Volume 22, Issue 4, pages 961-968). Within this manuscript, we described the epidemiological significance of breed specific NME as it occurs in the Pug (aka PDE). The aim of this prospective study was to search for commonalities in the clinical signs, region of residence, seasonal onset, treatments, and outcomes in a population of 60 pugs with PDE confirmed by necropsy. The "region of residence" parameter was predicted, if significant, to offer allergen or thermodynamic environmental information pertaining to the development of PDE; however, the study found that a Pugs' residential area in the continental United States had no correlation to the development of PDE. The disease is spread equally across the United States and the data does not indicate that one area or another is favorable or not favorable for Pug neurologic health.

The second manuscript which has been accepted by a peer-reviewed journal of widespread impact is entitled: "Heritability and transmission analysis of necrotizing meningoencephalitis in the Pug". With this manuscript, we were able to show that inbreeding is high in the breed, and there is definitely at least one area of the Pug genome contributing significantly to the development of PDE. The study also determined that Pugs treated with anticonvulsants have a significantly longer survival time than those not partaking in anticonvulsant therapy.

The third manuscript, entitled "Magnetic resonance imaging characteristics of necrotizing meningoencephalitis in pugs", is currently under review by a very respected veterinary journal. This manuscript describes the common features of PDE as seen on magnetic resonance imaging (MRI). We also aimed to compare the MRI features to physical exam and necropsy findings, and to determine whether or not MRI lesions were predictive of disease duration or outcome. These parameters were important to determine because of the difficult decisions faced by Pug owners when given the option of an MRI for Pugs suspected of having PDE.

This work offers veterinarians very descriptive terms by which to evaluate an MRI for PDE versus other, similar diseases. The results clearly demonstrate an increase in the number of brain lesions over time. This study is to date the largest done on Pugs, examining 18 Pugs who died of PDE. A previous study, which has contributed the most information to the field prior to this manuscript, examined two Pugs who had MRI and died with PDE. Interestingly, the study demonstrates that there is poor agreement between the physical exam and the extent of brain lesions. Necropsies proved that there were often extensive brain lesions, yet minimal or no clinical signs of disease in these dogs. It was clear though that the number of brain lesions significantly increased as time proceeded from first seizure.

In total, this project has contributed significantly to veterinarians' knowledge of PDE, as well as to owners' knowledge of things that do not contribute to PDE and items that may lend towards PDE. Having identified a focused area of the genome containing a significant genetic contribution towards PDE, we are rapidly working towards a genetic test that can offer valuable insight into which dogs are more or less likely to develop PDE. We are hopeful that we can work through several genes and genotypes within the focus area to firmly pinpoint which genotypes are susceptible and which are resistant". We will also be required to compare our identified genotype to genotypes in other breeds, especially those more similar breeds such as the French Bulldog and the Boston Terrier. This full exploration of the possible, available, and newly identified genotypes will bring us significantly closer to associating a single characteristic parameter with PDE. Collectively, we still feel that there are some yet unidentified environmental influences and possibly some lesser contributory genes associated with PDE. However, the significance of our current focus location (in the genome) has proven itself repeatedly and we are confident in our progression towards definitive genotypic association (which leads quickly to a genetic test).