Retrospective Analysis of Two Different Doses of Photobiomodulation Combined with Rehabilitation Therapy as a Therapeutic Protocol for Canine Degenerative Myelopathy

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Abstract

The objective of this retrospective study was to examine the impact that adding photobiomodulation therapy (PBMt) to intensive rehabilitation therapy had on the progression of clinical signs of Degenerative Myelopathy (DM) on patients treated at a single facility. All clinical records of dogs referred for presumed DM to a specialty rehabilitation facility between 2003-2012 were screened for patients meeting inclusion and exclusion criteria. Patients meeting criteria (n=20) were divided into two groups: a low dose (LD) group (n=6) and high dose (HD) group (n=14), based on the PBMt dose used. Items related to demographics, diagnostics, rehabilitation protocols, and time of progression of clinical signs from onset (Sym Onset) to non-ambulatory paresis (NAP) or paralysis and to euthanasia, were collected. Data was analyzed to determine differences in outcomes between the HD and LD groups, and historical data expectations as given by previous published studies. The mean time between the Sym Onset and NAP was 8.79 ±1.60 months (mean ± SD) in the LD group, and 31.76 ± 12.53 months in the HD group. The difference was significant (Wald statistic = 10.503, $p < .05$). The mean time between Sym Onset and time of euthanasia was 11.09 ± 2.68 months in the LD group, and 38.2 ± 14.67 months in the HD group. The difference was significant (Wald statistic = 10.747, $p < .05$). Kaplan-Meier survival analysis used to compare time from Sym Onset to NAP for the LD and HD groups, and a singular historical published study with sufficient data, showed that the time from Sym Onset to NAP for the HD group was significantly longer than the LD group (Mantel-Cox Log Rank statistic = 20.434, $p < .05$) or the historical group (Mantel-Cox Log Rank statistic = 16.334, $p < .05$). The authors acknowledge the limitations of a retrospective review. However, the data reviewed shows a significant difference in progression from Sym Onset to NAP and to time of euthanasia between these two PBMt dosage groups, and is suggestive of a similar difference between the HD group and the historical data presented. Further studies are warranted.