Food associated megaesophagus/polyneuropathy outbreak in Latvian dogs: summary of clinical signs, epidemiology and toxicological investigation

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Polyneuropathy (PNP) is a rare disease of dogs characterized by damage of multiple peripheral nerves. Megaesophagus (ME) may be one of the signs of PNP. In dogs PNP most commonly occurs secondarily due to metabolic or neoplastic disorders but also can be due to primary causes – various toxins or infections. Prior to 2014 PNP was a rare disease in dog population in Latvia, mostly occuring as a secondary disease.

In spring of 2015 Latvian veterinarians reported an unusual increase in dogs diagnosed with ME. Retrospective survey of veterinary practices identified more than 70 radiographically confirmed ME cases in the previous year representing significant increase over historic levels. Results of a retrospective study identified locally produced brand A dry dog food as a potential risk factor. Since April of 2014 until now more than 250 cases have been registered. Three studies (retrospective (R): Apr 2014-April 2015; prospective 1 (P1): May2015-Dec 2015; and prospective 2 (P2): Jan 2016 untill now) have been conducted with **objectives to monitor the cases and to determine the nature and cause of the disease.** During these studies epidemiological (R, P1, P2), clinical (R, P1), pathological (P1, P2) and toxicological investigations (P1, P2) were carried out. Throughout all studies case definition has remained consistent: only dogs with radiographically (or endoscopically) or necropsy confirmed ME were registered as affected dogs and included in the studies.

Affected dogs were adults (6; 1-12 years old), medium to large size (25-55kg), predominantly male (76%) representing mixed (30%) and various breed dogs (>20 breeds). The dogs lived in various parts of the country and were mainly kept in fenced-in enclosures (53%). Most common clinical signs were regurgiation and/or vomiting (94%) concurrently with weight loss (60%), dyspnea or cough (78%), dysphonia (72%), salivation (52%), and weakness (52%). Clinical signs varied from slowly progressive to sudden onset. The condition of affected dogs improved after switching to high calorie dog food and feeding from raised position. Mortality was 20-25%, mainly due to aspiration pneumonia and/or from deterioration of PNS.

In the case-control study conducted during P1 period 64 ME/PNP cases were compared to 123 control dogs without ME/PNP. Odds ratio for association between feeding brand A dry dog food and development of ME/PNP was more than 100, indicating very strong relationship. The risk of developing the disease was increasing along with the increase in proportion of brand A dry dog food in ration. Dog size/weight was a confounding factor. The disease was not associated to infection, vaccinations or preventive antiparasitic treatments. In the second half of 2016 gradual decrease in ME/PNP cases was seen paralleling decrease in the sales of brand A dry dog food.

For toxicological testing, samples from sick dogs and dog food consumed at the time of diagnosis were used. Tests have been negative for lead and other heavy metals, thallium, acrylamide, ionophores, botulism, mycotoxins and main pesticides. Affected dogs have severely decreased cholinesterase activity in their brain (but not in blood). Feed analysis revealed marked increase in Fe, Mn and Mg above recommended levels; however not in the toxic ranges.

Conclusions: ME/PNP outbreak in Latvian dogs is acquired disease in adult dogs and is closely linked with consumption of brand A dry dog food. While main causes of ME/PNP have been ruled out, the seach for the exact etiological factor continues.