Detection of hypoglycin A in the seeds of sycamore (Acer pseudoplatanus) and box elder (A. negundo) in New Zealand; the toxin associated with cases of equine atypical myopathy

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CASE HISTORY AND CLINICAL FINDINGS: During April and May 2014 four horses aged between 5 months and 9 years, located in the Canterbury, Marlborough and Southland regions, presented with a variety of clinical signs including recumbency, stiffness, lethargy, dehydration, depression, and myoglobinuria suggestive of acute muscle damage. Two horses were subjected to euthanasia and two recovered. In all cases seeds of sycamore maple (Acer pseudoplatanus) or box elder (A. negundo) were present in the area where the horse had been grazing.

LABORATORY INVESTIGATION: The samaras (seeds) of some Acer spp. may contain hypoglycin A that has been associated with cases of atypical myopathy in Europe and North America. To determine if hypoglycin A is present in the samaras of Acer spp. in New Zealand, samples were collected from trees throughout the country that were associated with historical and/or current cases of atypical myopathy, and analysed for hypoglycin A. Serum samples from the four cases and four unaffected horses were analysed for the presence of hypoglycin A, profiles of acylcarnitines (the definitive diagnosis for atypical myopathy) and activities of creatine kinase and aspartate aminotransferase.

Markedly elevated serum activities of creatine kinase and aspartate aminotransferase, and increased concentrations of selected acylcarnitines were found in the case horses. Hypoglycin A was detected in the serum of those horses but not in the healthy controls. Hypoglycin A was detected in 10/15 samples of samaras from sycamore maple and box elder from throughout New Zealand.

DIAGNOSIS: Cases of atypical myopathy were diagnosed on properties where samaras containing hypoglycin A were also found.

CLINICAL RELEVANCE: Sycamore and box elder trees in New Zealand are a source of hypoglycin A associated with the development of atypical myopathy. If pastured horses present with clinical and biochemical signs of severe muscle damage then the environment should be checked for the presence of these trees. Horses should be prevented from grazing samaras from Acer spp. in the autumn.