Cushing's Disease in Disguise - by Mark Robson

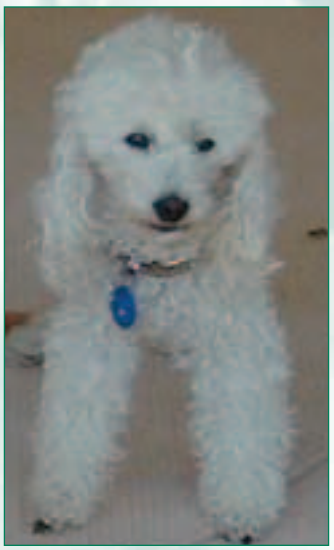
Emma, at the time an 11 year old speyed Miniature Poodle, was presented to VSG in June 2004. There had been a history of an occasional seizure many years previously but no ongoing evidence of a brain abnormality. There was a recent history of an abdominal disorder that had been provisionally diagnosed as pancreatitis.

However by the time we saw her the clinical signs were profoundly worse and of great concern. They had progressed to generalized weakness that was best described as tetraparesis. She could not stand and in fact could only lift her head. She was intermittently panting and had a Grade 3/6 mitral systolic murmur. There was no localizable lesion and her reflexes were adequate, although she started to lose these unilaterally after about 48 hours. Emma presented to us about the middle of the day on a Friday, so we had limited time to do diagnostics before the weekend. Her CBC and chemistry were suggestive of a hepatopathy, and an abdominal ultrasound was basically normal apart from a mildly enlarged liver. Her adrenal glands were of normal size and bilaterally symmetrical.

Her signs were most consistent with neuromuscular disease, and with no cranial nerve signs or neck pain we regarded a brain or cervical spine lesion as unlikely, but not impossible. Hypothyroidism was possible as her T4 was marginal at 6.4 nmol/L, but none of her other signs "smelt" of a hypothyroid crisis. Those dogs are usually hypothermic, mentally dull etc. A disorder such as myasthenia gravis remained a possibility. A chest film showed no sign of megaesophagus but at the time injectable pyridostigmine/edrophonium to check for myasthenia gravis (MG) was not available. I was concerned that if she had MG then we could be on the edge of a truly life threatening crisis. Having said that her attitude was remarkably bright and she was keen to eat and drink. I decided to treat her with oral Mestinon over the weekend on the basis that it was unlikely to hurt if she was not myasthenic and could be life saving if she was. At the same time serum was dispatched to Dr Diane Shelton's neuromuscular laboratory in the USA, but this result would take 10-14 days to come back (and was eventually normal).

Alas, after the weekend Emma if anything looked worse. Testing for an endocrinopathy was performed with an ACTH stimulation and TSH stimulation test. The latter was normal but her post-stimulation cortisol was 1010 nmol/L, which is a strongly positive result and at that level is only occasionally a false positive due to stress.

Emma was started on Lysodren and within 48 hours was showing signs of improvement, and within 96 hours she was walking, having been recumbent for nearly a week. It did take a few weeks for her gait and strength to entirely normalize. Her panting disappeared, and from that point she became a fairly routine Cushingoid for about 12 months. Then she became Addisonian even though she had not received an obvious overdose of Lysodren. Since then she has been a pretty "routine" iatrogenic Addisonian, requiring only hydrocortisone as she did not have electrolyte disturbances. I have now had 4 cases of Cushingoid tetraparesis over the past 10 years and it remains a fascinating syndrome. I have not seen it written up but have heard anecdotal reports from other internists of similar cases.



The pathophysiology seems to represent an extreme version of the myopathy that afflicts many Cushingoid dogs. This usually presents as lethargy and reluctance to exercise, which often progresses to reluctance to jump onto furniture or into the car. The classic "look" is a dog that gets his/her front legs up onto the couch then looks around for someone to help get the back end up! In fact I use these parameters as good clinical indicators to diagnose Cushing's and also to monitor the efficacy of treatment. The molecular events are poorly understood but are certainly a manifestation of deranged myocyte function as a result of cortisol excess. Muscle wasting is seen, probably as a result of protein catabolism. Interestingly Emma's CPK was normal. Recently Emma has required treatment for her mitral valve regurgitation and has had an extensive dental performed by her primary veterinarian, Dr Goldwater.

Emma represents a perfect example of the relationship between a good general practice such as Howick Veterinary Clinic and a referral institution such as VSG. She was referred when things were obviously not going well, and for other problems that have cropped up along the way, but her routine care and dispensed medications come from her primary clinic. She was close to being put to sleep when things looked bleak early on, but she is pretty much in good health now to the pleasure of her caring owners and veterinarians!