WHAT IS YOUR DIAGNOSIS?

An 9 year old, female neuter, English setter was presented to the R(D)SVS Internal Medicine Service for investigation of excessive salivation, occasional regurgitation, drooping eyelids and mask-like facial expression. Exercise tolerance was normal. The dog was slower to eat and some weight loss had been noted. Thoracic radiographs taken by the referring veterinary surgeon had revealed generalised megaesophagus and a spherical 3cm diameter mass rostral to the heart.

On clinical examination, the dog was quiet but alert with a body condition score of 3/9 and body weight of 21.7kg. Mucous membranes were pink and moist with a capillary refill time of < 2 seconds. The heart rate was 104 bpm with no arrhythmia or pulse deficits and the respiratory rate was 24 breaths/minute, with no adventitious lung sounds. There was bilateral ectropion of both lower eyelids. The palpebral reflex was absent in both eyes but the dog averted her head on tactile stimulation of the nasal septum. The gag reflex was reduced and tongue movement was weak. Abdominal palpation was unremarkable. Rectal temperature was normal at 38.8°C.

1) What is the most likely diagnosis in this case?
2) How would you confirm the diagnosis?
3) How would you treat this case?
1) The lack of palpebral reflex is due to dysfunction in the sensory function of cranial nerve V (trigeminal), the motor function of cranial nerve VII (facial) or of the facial muscles themselves. The fact that the dog averted her head when the nasal septum was touched with the end of a pair of artery forceps suggests that the sensory function of the trigeminal nerve was intact since this response relies on sensation detected by the ophthalmic branch of cranial nerve V and the head aversion is a conscious response i.e. it does not rely on another cranial nerve for the motor response. Therefore, there had to be dysfunction of either cranial nerve VII or the facial muscles themselves. The poor gag and tongue movement suggested deficits in cranial nerves IX, X and XII or muscle dysfunction. A brainstem lesion or neuromuscular/muscular disease would be suspected.

There are many potential causes of the megaoesophagus noted in this case (see What is your diagnosis? September 2014). Given the findings on cranial nerve examination, a polyneuropathy or muscular/neuromuscular disease would be suspected. The presence of the mass anterior to the heart together with megaoesophagus would raise suspicion for a diagnosis of thymoma with secondary myasthenia gravis. The lack of exercise intolerance does not rule out myasthenia because focal forms of the disease are recognised affecting the facial, pharyngeal, laryngeal and oesophageal muscles. Also, in one study, less than 40% of dogs with generalised weakness had reports of worsening of clinical signs with exercise.

2) To confirm the diagnosis of thymoma, a tissue sample is needed by needle biopsy (if physically possible) or excisional biopsy via thoracotomy for histopathological evaluation. Fine needle aspirates can yield a diagnosis, but it can be difficult to distinguish thymomas from mediastinal lymphoma on the basis of cytology due to the fact that both tumours can be comprised of small lymphocytes. Flow cytometry of cytology samples can be performed to reliably discriminate between thymoma and lymphoma. An intravenous edrophonium response test (“Tensilon test”) can be used for the diagnosis of myasthenia gravis, although poor availability means obtaining of this drug is currently difficult. A transient return of the palpebral reflex and facial movement would support the diagnosis. Diagnosis is confirmed by submitting serum for Acetylcholine Receptor Antibody titre (in this case the result was 1.59 mmol/l ref <0.6).

3) Treatment is aimed at supportive care such as elevated feeding to manage the megaoesophagus, monitoring for and treating episodes of aspiration pneumonia and treating the myasthenia gravis. Myasthenia gravis is an autoimmune disease in which antibodies are directed against nicotinic acetylcholine receptors on skeletal muscle at the neuromuscular junction, thereby impairing action potential transmission from nerve to muscle. This results in muscle weakness. Treatment is aimed at reducing the immune response with immunosuppressive medication such as prednisolone and azathioprine, together with improving nerve to muscle stimulation using pyridostigmine. Pyridostigmine is a long-acting anticholinesterase drug so acetylcholine released at the neuromuscular junction is not broken down and
its action is prolonged. Neostigmine, given intramuscularly, can be given for those patients who cannot tolerate oral medication due to frequent regurgitation.
In dogs with myasthenia associated with a thymoma, prognosis is good following surgical removal of the mass. Treatment of the thymoma with radiation therapy can result in partial or complete remission although remission and survival times are shorter compared to surgical treatment.

References

