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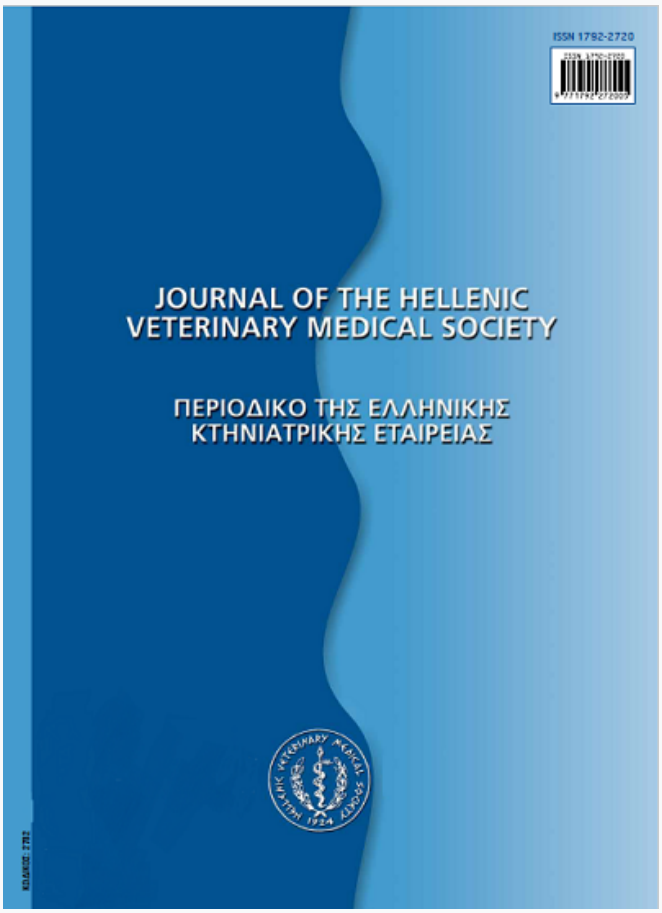

Spontaneous remission of localized myasthenia gravis manifested as megaesophagus in a dog

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Case report
Κλινικό περιστατικό

Spontaneous remission of localized myasthenia gravis manifested as megaesophagus in a dog

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Αυτοϊαση σε σκύλο με εντοπισμένη βαριά μυασθένεια που εκδηλώθηκε ως μεγαοισοφάγος

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ABSTRACT. A 2.5-year-old male German shepherd-cross dog was admitted for progressively deteriorating regurgitations of one-month duration. Physical examination was unremarkable, apart from a poor body condition; also, neurological examination did not reveal any abnormality. In thoracic survey radiographs, a generalized esophageal dilation, consistent with megaesophagus, was well visualized. An increased nicotinic acetylcholine receptor antibody titer confirmed the diagnosis of acquired focal myasthenia gravis expressed as megaesophagus in this patient. The only help offered to the dog was a modification of its feeding habits (upright position, small and frequent meals). Within two months of the initial admission and prior to institution of specific treatment for myasthenia gravis, the dog experienced spontaneous and complete clinical remission and remained healthy for the next two years, eating again the normal way, but unfortunately was lost to follow-up. The favourable outcome of megaesophagus due to localized myasthenia gravis is discussed accordingly.

Keywords: acquired megaesophagus, localized myasthenia gravis, dog

ΠΕΡΙΛΗΨΗ. Γερμανικός Ποιμενικός σκύλος που ήταν αρσενικός και είχε ηλικία 2,5 χρονών προσκομίστηκε επειδή κατά τον τελευταίο μήνα παρουσίασε αναγωγές που επιδεινώνονταν προοδευτικά. Στην κλινική και τη νευρολογική εξέταση δεν παρατηρήθηκε κάτι το αξιόλογο, εκτός από την κακή θρεπτική κατάσταση του ζώου. Στα ακτινογραφήματα του τραχήλου και του θώρακα παρατηρήθηκε σαφής διάταση του οισοφάγου καθ'όλο το μήκος του, που οδήγησε στη διάγνωση του μεγαοισοφάγου. Στην εργαστηριακή διερεύνηση διαπιστώθηκε ότι ο τίτλος αντισωμάτων κατά των υποδοχέων της ακετυλοχολίνης στον ορό του αίματος ήταν αυξημένος, γεγονός που θεμελίωσε τη διάγνωση του επίκτητου μεγαοισοφάγου από εντοπισμένη βαριά μυασθένεια. Η μόνη βοήθεια που προσφέρθηκε στο ζώο, με σκοπό τη βελτίωση της θρεπτικής του κατάστασης και την αποφυγή της εισροφητικής βρογχοπνευμονίας, ήταν η αλλαγή του τρόπου παράθεσης της τροφής (τάϊσμα σε όρθια στάση, μικρά γεύματα). Ο σκύλος, μέσα σε δύο μήνες από την προσκόμισή του και πριν από τη χορήγηση οποιασδήποτε θεραπευτικής

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αγωγής κατά της μυασθένειας, παρουσίασε πλήρη κλινική ύφεση, που διατηρήθηκε για τουλάχιστον δύο χρόνια μετά τη διάγνωση της πάθησης. Δυστυχώς, έκτοτε δεν μπορέσαμε να έλθουμε σε επαφή με τον ιδιοκτήτη του ζώου. Η κλινική εικόνα, η διαγνωστική προσέγγιση, η θεραπευτική αντιμετώπιση και η ευνοϊκή εξέλιξη συζητούνται στο τέλος της εργασίας αυτής.

Λέξεις ευρετηρίασης: επίκτητος μεγαοισοφάγος, εντοπισμένη βαριά μυασθένεια, σκύλος

CASE HISTORY

A 2.5 years old male German Shepherd-cross dog was referred with a history of progressively increasing regurgitations of one month duration. Physical examination, including a thorough neurologic evaluation, was unremarkable, except for the poor body condition score (2/5). Regurgitations were, also, noticed within an hour after having eaten solid food in the Clinic. Complete blood count (CBC), serum biochemistry and urinalysis revealed no abnormalities. The dog was tested negative for *Leishmania infantum* and *Ehrlichia canis* antibodies and *Dirofilaria immitis* antigens. Fecal analysis, performed by employing the Teleman sedimentation technique, was negative for *Spirocerca lupi* eggs. Cervical and thoracic plain radiographs demonstrated an extensive and severe dilation of esophagus, the lumen of which was filled with gas. Further evidence of megaesophagus was the ventral displacement of trachea, sharp interface between longus colli muscles and esophageal lumen and paired converging soft tissue stripes at the dorsocaudal aspect of the thorax (Figure 1). In an attempt to investigate the underlying causes of megaesophagus, the adrenocorticotropic hormone (ACTH) stimulation test and acetylcholine receptor (AChR) antibody titer by radioimmunoassay immunoprecipitation (Cambridge specialist laboratory services, Cambridge, UK) were performed. ACTH test was unremarkable, but AChR antibody titer was proved to be increased (1.46 nmol/L, reference range: <0.6 nmol/L), leading to suspicion of megaesophagus secondary to acquired myasthenia gravis (MG). Pending the result of AChR antibody titer, the dog was fed with a semisolid home made diet, offered in small meals and holding the dog in an upright position for a few minutes post-feeding. Oral cisapride (Alimix, Janssen-Cilag, Greece) was, also, given at the dose of 0.5 mg/kg B.W., every 8 hours, for 3 weeks. After two months, a telephone communication with the owner revealed a complete cessation of regurgitations without the aid of cholinergic medication. The dog has been clinically normal for two years since the initial admission.

DISCUSSION

Acquired megaesophagus, characterized by wall hypomotility and eventually lumen dilation, is perhaps the most common esophageal disorder in the dog (Tams 2003).

When the lumen is gas-filled, the diagnosis is straightforward even on survey radiographs, but not when it is fluid-filled. The characteristic features of megaesophagus in this dog were amply visualized in plain lateral radiographs (Wartous 2002), thus not justifying the need for contrast radiography. However, in most megaesophagus cases involving the adult dog, no underlying cause can be found, making the usual diagnosis of "idiopathy" unavoidable (Mears and Jenkins 1997, Gaynor et al. 1997). On the other hand, several central and peripheral neuropathies, junctionopathies and myopathies have been associated with megaesophagus (Johnson et al. 2009). The frequency of MG secondary to "idiopathy" in canine acquired megaesophagus is high and, therefore, it should be one of the top differentials (Tams 2003, Washabau 2005). So far, the generalized and focal forms of acquired MG have been recognized. Lack of historical or clinical evidence of episodic weakness, supported by the age and the breed of this dog, were suggestive of the localized form of the disease (Shelton et al. 1997, Otte et al. 2003). Many dogs initially diagnosed with "idiopathic" megaesophagus may actually have focal MG, as it has been the case with our dog, although a complete laboratory investigation was not possible to pursue. Shelton et al. (1990) tested serum samples obtained from 152 dogs with "idiopathic" megaesophagus for AChR antibodies, only to find that 40 of them (26%) had titers diagnostic for MG, as we witnessed in this dog. This test is considered to be the "gold standard" in the diagnosis of canine MG (Shelton 2002). At least 2% of dogs with generalized MG have been tested negative for AChR antibody, but the corresponding figures for localized MG are still not available (Shelton 1998). Despite the dramatic improvement of muscle strength noticed in

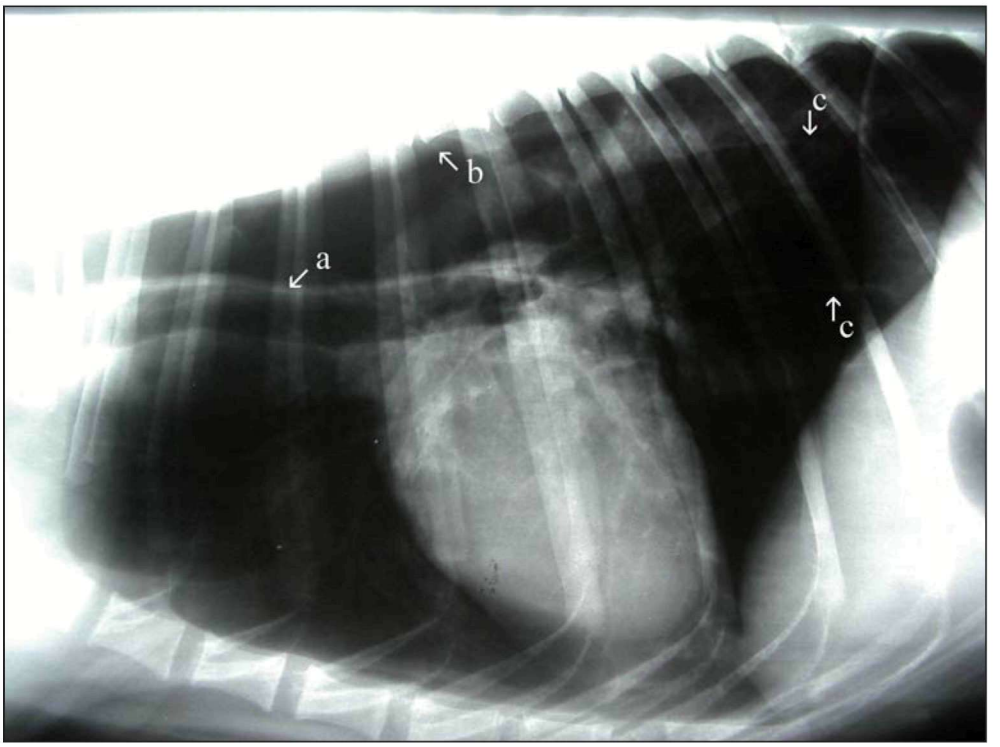

Figure 1.
Lateral view of the thorax demonstrating dilation of the entire esophagus with a gas filled lumen. The hallmark signs of the generalized esophageal dilation, including the tracheal stripe sign (a), the sharp interface between the longus colli muscles and the esophageal lumen (b) and the paired converging soft tissue stripes at the dorsocaudal aspect of the thorax (c), are seen.

dogs with the generalized type of MG undergoing the Tensilon test (edrophonium chloride), esophageal musculature is not responding well, thus limiting the diagnostic value in the localized MG (Shelton 2002, Inzana 2006). Since there is a possibility MG to appear secondarily to some autoimmune or neoplastic disorders (e.g. thymoma), a diagnostic search to this direction is advisable (Shelton 2002). However, CBC, serum biochemistry and urinalysis did not reveal any abnormality in this dog and thoracic radiography ruled out the existence of cranial mediastinal masses.

Although hypoadrenocorticism is an uncommon cause of megaesophagus in the dog, some cases, not accompanied by serum electrolyte abnormalities, have been presented with regurgitation as the main complaint; also, the potential of self-cure justifies the ACTH stimulation test in every dog with acquired megaesophagus (Bartges and Nielson 1992, Johnson et al. 2009). Nevertheless, no clinical and/or clinicopathological evidence of hypoadrenocorticism was witnessed in this dog. Hypothyroidism has, also, been included in the etiology of canine megaesophagus (Dewey 2003), though the thyroid profile was not evaluated in this dog due to financial restrictions. On the other hand, in a large-scale retrospective case-control study dealing with the risk factors that may lead to acquired megaesophagus in the dog, hypothyroidism was not incriminated even in a single case (Gaynor et al. 1997).

Canine spirocercosis is a relatively common cause of esophageal dysphagia and regurgitations, especially among hunting breed dogs living in Greece (Mylonakis et al. 2006). Our dog was negative for *S. lupi* eggs after having employed the fecal sedimentation technique. On thoracic radiographs, the characteristic finding of canine spirocercosis is an accumulation of intraluminal air and not the diffuse esophageal dilation that is typically seen in megaesophagus cases (Dvir et al. 2001, Mylonakis et al. 2006).

Similar to our case, as high as 88.7% of the dogs with either localized or generalized MG have been into spontaneous serologic and clinical remission on an average of 6.4 months after diagnosis (range: 1-18 months) (Shelton 2002). Unfortunately, the measurement of AChR antibody titer and thoracic radiography were not repeated to see if any improvement occurred. Despite the relapses witnessed occasionally (Tams 2003), our dog has been clinically normal for at least the last two years since the admission. Some affected dogs may progress to generalized MG, although this usually happens during the first weeks after the appearance of regurgitations (Tams 2003).

In dogs with megaesophagus, food is fed in small meals given several times daily, with the dog held in an upright position; this kind of feeding provides adequate control of regurgitation in many animals (Johnson et al. 2009). Food trials are the best way to determine which type of food is more helpful in the particular dog (Johnson et al. 2009). The therapeutic value of cisapride has been questioned, since it is known to increase the motility of smooth, but not of striated muscles that predominate in the canine esophagus. Moreover, in normal dogs, cisapride actually decreases esophageal transit time of food bolus (Mears and Jenkins 1997), thus making it difficult to evaluate its effectiveness in this dog. Localized MG is traditionally treated with long-acting anticholinesterase medications, such as pyridostigmine bromide and neostigmine, but this did not apply in our case because of the spontaneous recovery that was witnessed (Johnson et al. 2009).

In conclusion, dogs admitted with acquired megaesophagus should be investigated for underlying diseases, before being tagged "idiopathic". Poor prognosis associated with the latter disease and the potential of permanent cure following the treatment of the underlying diseases makes the pursuit of extensive laboratory evaluation fully advisable. ■

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