DOI:10.22059/IJVM.2024.376975.1005579 Iranian Journal of Veterinary Medicine

Original Article

Online ISSN: 2252-0554`

Radiographic Diagnosis of Megaesophagus and Secondary Aspiration Pneumonia in a 6-Year-Old Friesian Stallion: A Case Report

Sarang Soroori[1], Amirpooya Bahmanabadi[2], Amir Tavakoli[1], Banafsheh Shateri Amiri[1]

1-Department of Surgery and Radiology, Faculty of Veterinary Medicine, University of Tehran, Tehran, Iran
2-Veterinarian, Horse Practitioner,Tehran,Iran

Running title: Radiography of Megaesophagus in Friesian Stalli

Abstract

Thoracic megaesophagus is a rare and potentially life-threatening condition in horses, characterized by the dilation and decreased motility of the esophagus, leading to impaired swallowing and subsequent regurgitation. Due to the regurgitation and aspiration of feed material into the respiratory tract, aspiration pneumonia is a common complication associated with megaesophagus.Early and accurate diagnosis is crucial to initiate effective treatment and minimize the risk of complications. The goal of current study is diagnosis of this disorder by contrast radiography.Contrast radiography was performed to evaluate the esophagus following oral administration of a barium sulfate suspension, lateral images were acquired using a mobile X-ray unit. Lateral radiographs with and without oral contrast media show, dilated esophagus with fluid (contrast medium) and air, resulting in a gas- capped fluid line in the dilated caudal thoracic esophagus. In radiographic projections, cranial thoracic esophagus is also dilated with radiopaque fluid. There is mixed alveolar and interstitial pattern in the caudal lung lobes which is best seen over the caudal margin of the cardiac silhouette. These radiographic findings are indicative of megaesophagus in thoracic part in association with aspiration pneumonia.Current case report underscores the significance of considering thoracic megaesophagus as a potential cause of respiratory distress in horses. Early diagnosis and a comprehensive approach are crucial in managing this condition successfully. Integration of human medicine techniques, such as anti-reflux medications, physical therapy, and dietary modifications, can improve the quality of life for horses suffering from thoracic megaesophagus.

Keywords: Aspiration Pneumonia, Diagnosis, Friesian Stallion, Megaesophagus, Radiography.

Case history:

A 6-year-old Friesian stallion with poor body condition was presented with a history of chronic weight loss, coughing, and recurrent episodes of regurgitation. Auscultation revealed mild bilateral lung crackles. A variety of clinical problems occur in many breeds but some seem to have a remarkably high incidence in Friesian horses (Bezdekova, 2012). In The Netherlands, around 7% of the horse population is the Friesian breed and during the period 1995–2003, 7% of the caseload of the university clinic were Friesians. When thus overall considerably more than 7% of a disease is prevalent in Friesian horses, suspicion is raised that genetics may play an important role in the prevalence of that particular disease (Bezdekova and Janalik, 2018). Megaoesophagus is a chronic dilation and atony of the oesophagus. The atony results in accumulation of food and saliva in the dilated oesophagus. This often results in obstruction and impaction of the oesophagus and subsequent regurgitation and in some cases, aspiration pneumonia (Broekman and Kuiper, 2002). Megaoesophagus is mainly diagnosed in Friesian horses 1 week to 19 years of age and is presumed to be a genetically determined neuromuscular disorder (Boerma *et al*., 2012). Friesian horses have a perceived high rate of congenital or hereditary diseases, including megaesophagus, that may lead to choke and death. (Komine *et al*., 2014). Several different underlying pathophysiologies for megaesophagus have been proposed,

including the loss of interstitial cells of Cajal and idiopathic muscular hypertrophy of the distal esophagus (IMHO). (Ploeg *et al*., 2015).

Clinical presentation:

Clinical examination revealed decreased body condition, increased respiratory effort, and crackling lung sounds on auscultation. Based on these findings, a suspicion of thoracic megaesophagus with secondary aspiration pneumonia was raised.

Diagnostic testing:

Contrast radiography was performed to evaluate the esophageal motility and presence of any structural abnormalities. Following oral administration of a barium sulfate suspension, lateral images were acquired using a mobile X-ray unit (90 *kVp* and 10 *mAs)* with lateral standing positioning. The radiographs revealed a markedly dilated esophagus with a lack of peristaltic movements, confirming the diagnosis of thoracic megaesophagus (Figure 1). Additionally, a diffuse opacity with an interstitial and alveolar patterns was observed in the ventral lung fields, suggestive of aspiration pneumonia (Figure 2).

Assessment:

Lateral radiographs with and without oral contrast media show, dilated esophagus with fluid (contrast medium) and air resulting in a gas-capped fluid line in the dilated caudal thoracic esophagus. Cranial thoracic esophagus is also dilated with radiopaque fluid. There is mixed alveolar and interstitial pattern in the caudal lungs which is best seen over the caudal margin of the cardiac silhouette. These radiographic findings are indicative of megaesophagus in thoracic part in association with aspiration pneumonia. Megaesophagus is a relatively rare condition in horses and can have various underlying causes, including congenital defects or acquired neuromuscular dysfunction (Smiet and Kolk, 2013). In this case, the exact cause of the megaesophagus could not be determined, highlighting the need for further research in this area. Contrast radiography played a crucial role in diagnosing the thoracic megaesophagus and identifying the associated complication of aspiration pneumonia (Greet, 1982). Other causes of aspiration pneumonia due to dysphagia associated with the presence of *pantoea agglomerans* is reported in a horse (Mondo *et al*., 2024). Early and accurate diagnosis allowed for appropriate treatment and management plans to be implemented, ultimately leading to the horse's improvement. This case report highlights the importance of thorough diagnostic investigation, including contrast radiography, in identifying and managing complex gastrointestinal disorders in horses. The successful treatment and positive outcome in this 6-year-old Friesian stallion demonstrate the significance of early intervention and appropriate approach in challenging cases like this.

Conclusion: Current case report underscores the significance of considering thoracic megaesophagus as a potential cause of respiratory distress in horses. Early diagnosis and a comprehensive approach are crucial in managing this condition successfully.

Acknowledgments

The authors would like to thank Dr Bahmanabadi for referring the case.

Figure legends

Figure

CS-7
Ex: 1231024000068
Veterinary Diagnostic Center
Like, Boom
Se: 11
Im: 16/17
Acc: Maz
2023 Oct 24
Img Tm: 13:14:32

Lateral radiograph of thoracic region of a 6-Year-Old Friesian Stallion with oral contrast media: dilated esophagus with fluid (contrast media) and air resulting in a gas-capped fluid line (arowheads) in the dilated caudal thoracic esophagus is detected. Cranial thoracic esophagus is also dilated with radiopaque fluid (straight line).

Figure 2

cs-7
Ex: 1231024006B
ML
Se: 11
Im: 13/17
Veterinary Diagnostic Center
Like, Boom
M 0208201
Acc: Maz
2023 Oct 24
Img Tm: 13:08:01

Lateral radiograph of thoracic region of a 6-Year-Old Friesian Stallion: a diffuse opacity with an alveolar pattern is observed in the ventral lung fields, suggestive of aspiration pneumonia.

Ethical Considerations

Compliance with ethical guidelines, the patient's veterinarian involved in the case provided written informed consent for the diagnostic work-up and participation in this case report.

References:

Bezdekova, B. (2012). Esophageal disorders in horses-a review of literature. *Pferdeheilkunde*, *28*(2), 187-192. doi: 10.1080/01652176.2002.9695136. PMID: 12540136

Bezdekova, B., Janalik, P. (2018). Oesophageal disorders in horses: retrospective study of 39 cases. *Equine Veterinary Education*, *30*(2), 94-99. https://doi.org/10.1111/eve.12703

Boerma, S., Back, W., Sloet van Oldruitenborgh-Oosterbaan, M. M. (2012). The Friesian horse breed: A clinical challenge to the equine veterinarian. *Equine Veterinary Education*, *24*(2), 66-71. https://doi.org/10.1111/j.2042-3292.2011.00302.x

Broekman, L. E. M., Kuiper, D. (2002). Megaesophagus in the horse. A short review of the literature and 18 own cases. *Veterinary quarterly*, *24*(4), 199-202. DOI: 10.1080/01652176.2002.9695136 PMID: **12540136**

Greet, T. R. C. (1982). Observations on the potential role of oesophageal radiography in the horse. *Equine veterinary journal*, *14*(1), 73-79. doi: 10.1111/j.2042-3306.1982.tb02341.x PMID: **7084183**

Komine, M., Langohr, I. M., Kiupel, M. (2014). Megaesophagus in Friesian horses associated with muscular hypertrophy of the caudal esophagus. *Veterinary pathology*, *51*(5), 979-985. DOI: 10.1177/0300985813511126 PMID: 24227010

Mondo, E., Rinnovati, R., Scarpellini, R., Illuzzi, A., Giacometti, F., Savini, F., ... & Piva, S. (2023). Aspiration from Dysphagia Associated with the Presence of Pantoea agglomerans in a Horse. *Iranian Journal of Veterinary Medicine*. http://dx.doi.org/10.32598/ijvm.18.4.1005422

Ploeg, M., Gröne, A., Saey, V., De Bruijn, C. M., Back, W., Van Weeren, P. R., Delesalle, C. (2015). Esophageal dysfunction in Friesian horses: morphological features. *Veterinary pathology*, *52*(6), 1142-1147. DOI: 10.1177/0300985814556780 PMID: **25367366**

Smiet, E., van der Kolk, J. H. (2013). Equine oesophageal dysfunction. *Equine Veterinary Education*, *25*(6), 287-289. doi: 10.1016/j.eveq.2016.11.004. PMID: 28325176

تشخیص رادیوگرافی مگاازوفاگوس و پنومونی استنشاقی ثانویه در یک نریان 6 ساله نژاد فریزین: گزارش موردی

سارنگ سروری[1*]، امیرپویا بهمن آبادی[2]، امیر توکلی[1]، بنفشه شاطری امیری[1]

1. گروه جراحی و رادیولوژی، دانشکده دامپزشکی دانشگاه تهران، تهران، ایران
2. دامپزشک شاغل در حیطه اسب،تهران،ایران

اتساع (مگاازوفاگوس) بخش سینه ای مری یک وضعیت نادر و درعین حال تهدید کننده حیات در اسب ها می باشد که با اتساع مری، کاهش حرکات پریستالتیک و متعاقباً اختلال در بلع و ریگورجیتیشن نمود پیدا می کند. بدلیل ریگورجچیتیشن و ورود مواد غذایی به داخل مسیر تنفسی، پنومونی استنشاقی یکی از عوارض شایع مگاازوفاگوس می باشد. تشخیص صحیح و زودهنگام این عارضه بمنظور شروع درمان موثر و کاهش ریسک عوارض ناشی از آن ضروری است.

رادیوگراف های جانبی با ماده حاجب برای ارزیابی مری و پس از خوراندن سوسپانسیون باریوم تهیه شدند. رادیوگراف های لترال با و بدون ماده حاجب خوراکی، اتساع مری با مایع و هوا را نشان می دهد که بصورت یک خط حدفاصل مایع و گاز در قسمت خلفی مری نشان داده می شود. در تصاویر رادیوگرافی، قسمت قدامی مری نیز با ماده حاجب رادیواپک اتساع یافته است. الگوی میکس آلوئولار و بینابینی در لوب های خلفی ریه مشاهده می شود که در قسمت خلفی مری به

بهترین شکل قابل مشاهده است. این یافته های رادیوگرافی موٌکد مگاازوفاگوس در بخش سینه ای مری و متعاقباً پنومونی استنشاقی می باشند.مطالعه حاضر اهمیت توجه و تشخیص مگاازوفاگوس را بعنوان علت احتمالی دیسترس تنفسی در اسب ها خاطرنشان می کند. تشخیص زودهنگام و رهیافت دقیق و کامل در مدیریت موفقیت آمیز وضعیت ضروری است. بکارگیری و ادغام تکنیک های درمانی در حیطه پزشکی می تواند در بهبود کیفیت زندگی اسب های درگیر با مگاازوفاگوس کمک کننده باشد.

کلمات کلیدی: پنومونی استنشاقی، تشخیص، رادیوگرافی، مگاازوفاگوس، نریان فریزین.