Esophageal obstruction: a pathway to success

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Introduction

Esophageal obstruction, also known in the lay community as 'choke', is a frequent chief complaint for veterinary evaluation. Even though some horses may resolve on their own, or quickly resolve with basic intervention by the veterinarian (i.e., an uncomplicated case of esophageal obstruction), it should be considered a medical emergency and the horse should be evaluated promptly as some horses require more aggressive therapy and are more likely to develop complications (i.e., a complicated case of esophageal obstruction).

Esophageal obstruction is most commonly due to impaction of pelleted-type feed, but horses have been reported to obstruct on many other things. Frequent causes include ingestion of un-soaked beet pulp or cubed forage, treats such as carrots and apples, and foreign bodies. In many cases, the development of an esophageal obstruction is a one-time event and not associated with an underlying medical condition. In these cases, the horse may have rapidly consumed the feed or had poor water intake; however, in some cases there is an underlying cause for the obstruction which may result in repeated episodes. Reported causes include poor dentition and a subsequent

inability to properly masticate food, neurological/neuromuscular disease, compression of the esophagus by a mass (e.g., neoplasia, abscess, granuloma, cyst, etc.), or esophageal abnormalities such as strictures or a diverticulum.

The clinical signs of acute esophageal obstruction are fairly easily recognizable. Horses will often cough during or after eating and feedstuff or saliva will be evident from the nostrils. The horses are often anxious or distressed, and may or may not show retching behavior. Some horses that have been obstructed for a longer period of time may only show mucoid nasal discharge, lethargy, and/or inappetence.

UNCOMPLICATED CASES OF ESOPHAGEAL OBSTRUCTION

Veterinary intervention in cases of esophageal obstruction can begin as soon as the owner or caretaker makes the phone call to request veterinary care. The veterinarian should ask the owner to house the horse in a confined area without access to feed or water. Additionally, the horse can be sedated if the owner or caretaker has the skill to do so and the medication is available on the farm. Prompt sedation alleviates the anxiety the horse experiences with this condition, relaxes the cervical musculature, and allows oropharyngeal contents (primarily saliva) and esophageal reflux caused by the obstruction to drain away from the airway. It is important to note that sedation on the farm by the owner/handler should be thoughtfully considered and only recommended when sedation can be given safely. The administration of sedation sublingually or intramuscularly may be safe alternatives to intravenous administration which if given incorrectly can be fatal.

As mentioned, esophageal obstruction should be treated as a medical emergency. On initial presentation of the horse, a complete physical examination should be performed. Palpation of the cervical esophagus on the left side of the neck may result in identifying the location of the obstruction. It is the author's experience that most horses obstruct in the cervical esophagus, but the obstruction is not always easily palpable. Additional attention during the physical examination should be focused on pulmonary auscultation as aspiration pneumonia is a common sequela associated with esophageal obstruction. Following the initial physical examination, the horse should be heavily sedated to ensure a low head carriage. This helps facilitate drainage of oropharyngeal contents and lavage fluid. Intravenously administered medication to provide balanced standing anesthesia is recommended. The author prefers a longer-acting alpha-2 agonist such as romifidine or detomidine paired with an opioid such as butorphanol. Once the horse is sedated, a nasogastric tube should be passed into the esophagus and advanced slowly until it meets the obstruction. While ensuring that the head carriage remains low, warm water can be pumped through the tube into the esophagus to rehydrate the impaction. The author typically holds the tube securely at the nostril while an assistant pumps fluid. Water should flow back out the nostrils and mouth during the lavage procedure. This is a normal occurrence. If the horse has obstructed on feedstuffs, feed material will be evident in the lavage fluid that is washed from the esophagus. After the initial attempt to relieve the obstruction with lavage, the nasogastric tube should be advanced to see if the obstruction is clear or if it has moved distally. If the obstruction remains, continued lavage is necessary. Care should be taken when advancing the tube within the esophagus as to not forcefully damage the esophagus or damage an underlying diverticulum or stricture if present. It is best practice to continually lavage the esophagus while slowly and gently advancing the tube, never forcing it. Frequently, minimal lavage will result in passage of the

obstruction and ease in advancing the tube into the stomach. Once the tube reaches the stomach, it is appropriate to assume that the obstruction has cleared the esophagus.

Following resolution of the esophageal obstruction, the horse should be examined and treated for any possible adverse effects associated with the obstruction. In most uncomplicated esophageal obstructions, this entails ensuring that the horse is well-hydrated, treating for aspiration pneumonia, providing analgesia and anti-inflammatory therapy, and modifying the diet to prevent re-obstruction. Clinical dehydration can be assessed on physical examination. In cases of mild dehydration, administration of water, with or without supplemental electrolytes, by nasogastric tube may be sufficient. In cases in which the horse was obstructed for a longer period of time, intravenous fluid therapy for restoration of hydration may be necessary. It is important to recognize that horses obstructed for longer periods of time lose a considerable amount of fluid in the form of saliva in addition to not having been able to drink while obstructed. Aspiration of oropharyngeal contents frequently results in pneumonia of varying severity. It is reported to be the most frequent complication associated with esophageal obstruction in horses (up to 70% of horses admitted to a teaching hospital) and it is an increased risk in horses that are obstructed for longer than 3 hours. These findings provide strong evidence for treatment of aspiration pneumonia with empirical broad-spectrum antimicrobial therapy. It is important to note that in cases of acute esophageal obstruction, culture of pulmonary fluid collected by transtracheal wash is of little value as it frequently results in a mixed growth of oropharyngeal contaminants. However, should a horse fail to respond to empirical broad spectrum antimicrobial therapy, bacterial culture of fluid collected by transtracheal wash is warranted to guide medication decisions. Administration of flunixin meglumine for its visceral analgesic and anti-inflammatory

effects may improve the horse's comfort following relief of the obstruction, as well as decreasing inflammation at the site of obstruction in the esophagus and within the lungs. Lastly, following relief of the obstruction the diet should be modified to provide esophageal rest. Initially, feed should be withheld (approximately 12-24 hours) and then gradually re-introduced in the form of well-soaked feed and grass. Prior to re-introduction of feed, the horse should have an oral examination and dental abnormalities should be corrected to ensure proper mastication of feed. Following correction of an uncomplicated case of esophageal obstruction, most horses will respond well to therapy and return to normal attitude and appetite without problems.

COMPLICATED CASES OF ESOPHAGEAL OBSTRUCTION

The initial evaluation of complicated cases of esophageal obstruction is similar to that described for uncomplicated cases; however, a complicated case fails to resolve with simple lavage. With these cases, it is important to recognize that there may be underlying causes for the obstruction such as a stricture or diverticulum; that the horse may have obstructed on a foreign body; or the obstruction may be extremely long. In cases of complicated obstruction, additional diagnostic and therapeutic intervention is needed, and depending on the on-farm capabilities, these cases may require referral.

When presented with a case of esophageal obstruction that fails to resolve with sedation and lavage, endoscopic examination of the esophagus and the associated obstruction is warranted. Esophagoscopy allows for direct visualization of the esophageal mucosa and the most cranial aspect of the obstruction. Additionally, it can be used to assist in retrieval of foreign bodies or breakdown of the obstruction (e.g., using the endoscopic biopsy instrument to loosen fibers

associated with feed obstructions). Esophagoscopy is at its most useful when used after relief of the obstruction for identification of abnormalities associated with the mucosa such as ulcerations, functional abnormalities (e.g., dysmotility), or structural abnormalities (e.g., stricture or diverticula).

In conjunction with esophagoscopy, the author finds that esophageal radiographs are very valuable in directing therapy for relief of complicated cases of esophageal obstruction. A radiograph of the esophagus provides information about the length of the obstruction and possibly the content of the obstruction. Determining the length can impact how the clinician chooses to proceed in relieving the obstruction. For example, if the radiograph shows an obstruction that is small in length, the clinician may choose to pursue continued standing sedation and lavage. If the obstruction is excessively long, general anesthesia may be required. If the radiograph shows a foreign body, an esophageal tear, etc., surgical intervention may be indicated. Additionally, radiographs can confirm the location of the obstruction within the esophagus. Following relief of the obstruction, esophageal contrast radiography is indicated for identifying strictures and diverticula, particularly in horses that have experienced repeated episodes of esophageal obstruction. For the clinician practicing in a field setting, radiographs of the cervical esophagus with or without contrast can be performed with standard equipment; however, obtaining images of the thoracic esophagus may be more challenging depending on the size of the horse and available equipment.

Ultimately, in complicated cases of esophageal obstruction that fail to resolve with sedation, lavage, and restoration of hydration, general anesthesia may be needed. The horse is placed

under general anesthesia and positioned into lateral recumbency in a mild Trendelenburg position (i.e., head slightly lowered). The horse is intubated with a cuffed endotracheal tube to protect the airway. Aggressive lavage is used to relieve the obstruction. In the author's experience, this technique is highly effective for refractory cases of esophageal obstruction. It is important to note that one must perform this technique carefully. Lavage must immediately cease upon relief of the obstruction (which is indicated by a lack of backflow of fluid from the nostrils) as to prevent rupture of the stomach due to fluid overload. Use of this technique must also be considered high-risk if significant esophageal damage is present, which is sometimes difficult to evaluate prior to relief of the obstruction.

Surgical intervention may be required in some complicated cases of esophageal obstruction. Obstructions of the cervical esophagus are the most easily accessible for surgical correction by esophagotomy. Obstructions of the distal cervical esophagus, thoracic esophagus, and short abdominal portion, are difficult to access although surgical intervention of these sites have been reported.

In complicated cases of esophageal obstruction, the likelihood for the development of aspiration pneumonia is high. Treatment with broad-spectrum antimicrobial therapy is warranted. The author typically chooses the antimicrobial therapy based on the type of bacteria likely to be associated with pneumonia, the physical examination and diagnostic findings, the needs of the owner regarding frequency and ability to deliver medications to the horse, and the willingness of the horse to tolerate the method of delivery and effects of the medication. As the airway is contaminated with oropharyngeal contents, ensuring that coverage against gram negative aerobic

and anaerobic bacteria is essential. Additionally, gram positive organisms are frequent opportunistic organisms associated with a compromised airway, therefore these organisms are targeted as well. The author tailors the antimicrobial therapy to cover gram positive and negative aerobes and adds metronidazole when appropriate to ensure that gram negative anaerobic organisms are also treated. After initiating treatment, the horse should be monitored closely and the horse's response should dictate when antimicrobial drugs are discontinued.

SUMMARY

As with an uncomplicated case of esophageal obstruction, once the persistent obstruction has been relieved, effort should be placed into treatment of aspiration pneumonia and determining if an underlying cause can be identified (as described above with the use of esophagoscopy and contrast radiography). The identification of structural or functional abnormalities associated with the esophagus should be considered individually to determine the best therapeutic options. Dietary management and appropriate dental care should also be considered an imperative part of prevention of future episodes of esophageal obstruction. Finally, educated owners and handlers that esophageal obstruction is a medical emergency should result in more prompt veterinary intervention which may result in fewer complications.

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