

Nephrosplenic Entrapment

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Nephrosplenic entrapment, also known as left dorsal displacement, is a type of colic that occurs when the left large colon gets entrapped over the nephrosplenic ligament. The nephrosplenic ligament connects the left kidney to the spleen in the horse. Of the horses that present for colic, approximately 2.5-9% are diagnosed with nephrosplenic entrapment (Nelson et al., 2016).

Etiology (cause)

It is not clear what the direct cause of nephrosplenic entrapment is. It is hypothesized or suspected that it is a result of colonic motility dysfunction or an accumulation of gas, which allows the large colon to move between the spleen and body wall. The colon then entraps over the nephrosplenic ligament after further dorsal displacement.

Signalment (age, breed, sex)

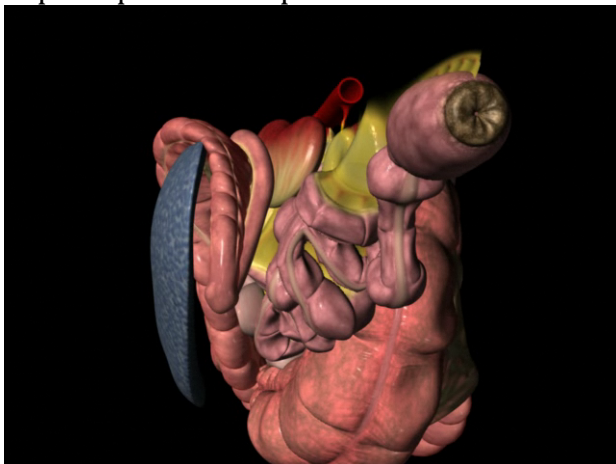
Occurs most commonly in older geldings.

Clinical Signs

Mild to moderate abdominal pain (colic) can occur. Signs can include crouching, leaning to the left, or a desire to go down. Nasogastric reflux (more fluid comes out of the stomach than is pumped into it by nasogastric tube) may be obtained if the colon places pressure on the duodenum (the first portion of the small intestine). Tympanitic sounds can sometimes be heard on auscultation.

Diagnosis

Diagnosis is usually made through a combination of different diagnostics. Rectal palpation is one of the primary diagnostics used in the diagnosis of nephrosplenic entrapment. A gas distended left colon, palpation of the colon in the nephrosplenic space, and the left ventral colon lying dorsal to the left dorsal colon are all findings that support the diagnosis of nephrosplenic entrapment.



(The Glass Horse)

Left colon in the nephrosplenic space over the nephrosplenic ligament



(The Glass Horse)

Normal anatomy of the nephrosplenic space and renosplenic (nephrosplenic) ligament

Transabdominal ultrasonography (ultrasound of the abdomen) is another diagnostic that is commonly used in the diagnosis of nephrosplenic entrapment. On ultrasound, the view of the left kidney will often be obstructed due to a gas filled colon. Being unable to visualize the left kidney is not definitive in the diagnosis of this condition. The dorsal aspect of the spleen can be ventrally displaced. The view of the dorsal aspect of the spleen can also be obliterated by gas echogenicity.

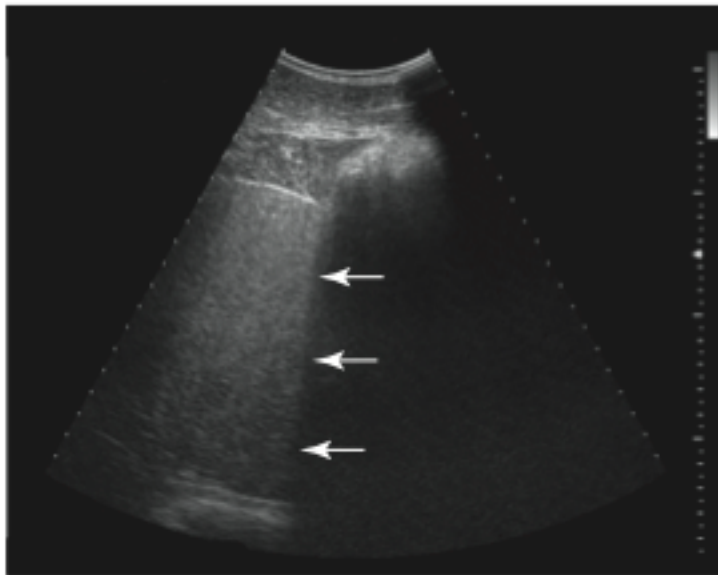


Figure 14-24 Transcutaneous abdominal sonographic image obtained from the left fifteenth intercostal space showing horizontal dorsal border of spleen (arrows) due to gas shadowing of large colon within nephrosplenic space. Dorsal is to the right of the image.

(Orsini and Divers, 2014)

Other diagnostics used include bloodwork, such as complete blood count (CBC), chemistry, packed cell volume (PCV), and total protein (TP). Bloodwork with nephrosplenic entrapment is usually normal, but mild dehydration can be seen.

Abdominocentesis, a technique where fluid is collected from the abdominal cavity using a needle, usually reveals normal abdominal fluid. The fluid may contain blood from the spleen, since the spleen is usually located more ventrally.

Treatment

Non surgical

Non-surgical treatment can consist of administration of intravenous fluids, sedatives and analgesics, administration of phenylephrine followed by exercise, and rolling under general anesthesia.

An intravenous catheter is often placed to facilitate administration of intravenous fluids, sedatives, analgesics, and phenylephrine. Intravenous fluids are given to maintain hydration and correct any dehydration. Sedatives and analgesics (drugs for pain control) can be used for mild to moderate and severe pain. Xylazine, with or without Butorphanol, and flunixin (Banamine) are often used for mild to moderate pain. Detomidine is often used for more severe pain. Xylazine is a short-acting alpha-2 agonist drug that provides both sedation and analgesia. Butorphanol is an opioid drug used as an analgesic. Flunixin is a non-steroidal anti-inflammatory drug used to decrease pain and inflammation. Detomidine is also an alpha-2 agonist drug, but is longer acting than Xylazine.

Phenylephrine is often administered and is followed by lunging. Phenylephrine is a medication that works by constricting blood vessels. This causes the spleen to contract, which helps to dislodge the colon from the nephrosplenic space. The dose usually given is 10-20 mg in 1 L of saline at a slow rate (3 micrograms/kg/min) over 15 minutes. This is followed by approximately 20 minutes of lunging to aid in dislodging the colon from its entrapment. After lunging, rectal and ultrasound exams are repeated to see if the colon has dislodged.

If the colon has not gone back to the correct position, a rolling procedure can be performed under general anesthesia. The horse is dropped on its right side, so the left colon that is entrapped is uppermost. The horse is then rolled into dorsal recumbency (on its back), then on its left side. The horse can be palpated per rectum while recumbent (down) to see if the entrapment is resolved. Ultrasound can also be repeated following the rolling procedure. The rolling procedure can be repeated if the entrapment does not resolve, or the horse can be taken to surgery.

Surgical

Surgical treatment may be indicated if nonsurgical treatment is unsuccessful, or the horse is unresponsive to analgesics and sedatives. Other indications for surgery can include presence of nasogastric reflux, colic of long duration, and abdominal distention.

Methods of surgical treatment include ventral midline celiotomy, standing flank laparotomy, and standing laparoscopy. A ventral midline celiotomy (abdominal exploratory

surgery) is performed under general anesthesia. It helps to ensure a successful correction and allows opportunity to evaluate overall intestinal health. A standing flank laparotomy (incision into flank) is performed with sedation and avoids general anesthesia. Avoiding general anesthesia helps to reduce the recovery time. This approach provides direct access to entrapment when performed on the left. Standing laparoscopy is not commonly performed, but typically involves three small incisions, one for the laparoscope (camera) and two other portals for instruments.

Prevention

Nephrosplenic space ablation (surgical closure of the nephrosplenic space) helps to prevent recurrence. This can be performed by standing flank laparotomy, but is usually performed by standing laparoscopy and typically is performed in horses with previous nephrosplenic entrapment events. Methods of laparoscopic closure have included suturing the space closed, using mesh, and barbed suture. Other surgical methods of prevention include large colon colopexy (attaching the large colon to the body wall) and large colon resection (removing a portion of large colon).

References

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