

MESENTERIC TORSION

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Mesenteric torsion, or volvulus, is a rare condition where the small and/or large intestine can twist on the mesenteric root, causing bowel obstruction, ischemia and necrosis. The condition is often fatal, although there are cases of survival in both dogs and cats. The normal intestine is held loosely in position by attachments to the peritoneal surface and connecting viscera. The majority of the jejunum only has the loose mesenteric attachments, making it most susceptible to torsion at its axis. The cranial mesenteric artery and its branches become obstructed, leading to ischemic necrosis of the distal duodenum, jejunum, ileum, ascending colon, and proximal descending colon.¹ It is possible, though not common, to have a localized torsion that only involves a jejunal segment not involving the mesenteric root.

There is no known cause for mesenteric torsion. It is most frequently seen in young, male, large-breed dogs. The German Shepherd is the most commonly reported breed, with reports in dogs less than one year of age, and may be predisposed to a worse prognosis.² Case reports have identified English pointers as being predisposed, and it has been recorded in some toy breeds and cats. The cause of mesenteric torsion is not known. It has been associated with recent gastrointestinal surgery, blunt trauma, gastric torsion, lymphocytic-plasmocytic enteritis, ileocolic carcinoma, and gastrointestinal foreign bodies. ^{1,2} German shepherd dogs were diagnosed with mesenteric torsion who were also suffering from exocrine pancreatic insufficiency.³ In this report, eight dogs were euthanized on owner request; four dogs died at home before treatment could be started; and nine had surgery, all of which died during recovery.

Clinical signs can be acute or peracute, depending on the degree and location of the torsion. Acute abdominal pain, depression, vomiting, fever, and abdominal distention are common. Hematochezia may be seen secondary to sloughing of the intestinal mucosa as a result of intestinal vascular compromise. Blood work changes can be non-specific, especially early in the course of disease. Reported changes include normal packed cell volume, hypoalbuminemia, hypoproteinemia, hypokalemia, and leukocytosis.⁴ Diagnosis can be made from radiographs, although early in the course of the disease they may not show the generalized massive dilatation of the bowel which is classically seen (Figures 1,2).



Figures 1 and 2: Ventro-dorsal and lateral radiographs of a 3 y/o male German Shepherd presenting with acute abdomen. Severe small intestinal dilatation is noted with mild peritoneal effusion. Exploratory surgery revealed mesenteric torsion. Derotation of the torsed mesenteric root was performed, but massive and irreversible bowel necrosis resulted in euthanasia while under anesthesia.

Free fluid may be noted in the abdomen depending on time of diagnosis, and this can range from a serosanguineous transudate to a neutrophil-rich exudate as changes progress. Presence of toxic neutrophils and intracellular bacteria may indicate rupture

of the bowel lumen.

Mesenteric torsion is a medical and surgical emergency. Most animals will present in some form of hypovolemic shock, and aggressive treatment with crystalloid and colloid fluids should be instituted immediately. Broad-spectrum antibiotics should be started, as proliferation and translocation of intestinal bacteria occurs rapidly.

Use of anti-inflammatories may be warranted since systemic inflammatory mediators are released, contributing to systemic organ dysfunction.

Medical management will help to stabilize the patient, but immediate surgery is the only chance for survival. Identification and derotation of the affected segment is necessary to see if the damage is irreversible. Similar to a splenic torsion, derotating the vascular pedicle could result in reperfusion injury and increase the severity of the systemic inflammatory response. Unfortunately, the entire mesenteric root cannot be removed and allow enough intestine for survival, and so resecting the bowel without untwisting it can usually only be done when the torsion is segmental.

Once the torsed portion is reduced, time is needed to evaluate the effects of reperfusion, and resect all compromised bowel. In many cases this can be 70-80% of the intestine, resulting in short bowel syndrome and intestinal malabsorption if the patient survives. Timing is vital. Immediate surgery with derotation can result in survival without intestinal resection. Without immediate recognition and surgery, most dogs will die from vascular obstruction and intestinal ischemia. Animals who survive surgery may succumb to the systemic effects of circulatory and endotoxic shock in the hours to days post-operatively. Blood products, especially plasma, are often required and in large quantities. These are often high acuity, critical care cases, and owners should be prepared for potentially high costs and complications prior to proceeding with treatment.

Prognosis is usually reported as poor to grave. There are enough cases reported showing survival with immediate surgery to warrant surgical exploration at the time of diagnosis. In many cases the poor condition of either the patient or the derotated bowel may necessitate a non-recoverable surgery, but it is the only chance the animal may have for survival.

References

1,2,4. Tobias K, Johnston S. Small Intestine. In: Veterinary Surgery: Small Animal, Volume II; Saunders,2011; 1538-40.

3. Westermarck E et al. Mesenteric torsion in dogs with exocrine pancreatic insufficiency: 21 cases(1978-1987). JAVMA 1989 Nov 15;195(10):1404-6.

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