Dysuria and stranguria in horses can accompany urethritis and/or cystitis, vesical calculi, urethral obstruction, or neurological conditions that prevent normal emptying of the bladder (1). We describe herein a horse with stranguria and pollakiuria caused by an abdominal abscess and adhesions involving the bladder.

A 10-year-old Quarter Horse mare was referred to the Atlantic Veterinary College with a 10 day history of fever, tachycardia, depression, anorexia, stranguria, pollakiuria, and one episode of colic characterized by pawing and rolling. Past history included mild episodes of colic which were attributed to a cribbing habit. The horse had been treated with fecal softeners and broad spectrum antibiotics for one week with no apparent improvement in its condition other than resolution of the fever. Flunixin meglumine (Banamine, Schering Canada Inc., Pointe-Claire, Quebec) was administered on three occasions at a dose of 600 mg per treatment intravenously to relieve discomfort. Vaccination against tetanus, influenza, and western and eastern equine encephalomyelitis had been performed one month before admission. The horse was dewormed at two to three month intervals.

Upon presentation, the most significant physical examination findings were poor body condition, stranguria which was characterized by looking at the flank, prolonged squatting, and swishing of the tail during urination, and pollakiuria. Palpation per rectum revealed an intrapelvic mass occupying the left lateral and ventral pelvic floor. The mass was adherent to the pelvic flexure of the large colon and measured approximately 9 cm dorsoventrally and 20 cm transversely. The bladder could not be palpated. Ultrasound evaluation of the mass per rectum using a 5 megahertz probe showed it to have uniform echogenicity with a few small focal anechoic areas. The mass appeared to be impinging on the cranial aspect of the bladder, resulting in decreased bladder capacity. Differential diagnoses for the mass included abscess or neoplasm.

A complete blood count revealed mature neutrophilia (10.9 x 10^9/L, reference range 2.7-6.7 x 10^9/L) and mild hyperfibrinogenemia (6 g/L; normal < 5 g/L) compatible with inflammation. Results of urinalysis were within normal limits. Peritoneal fluid obtained by paracentesis showed a nonseptic exudate (WBC 55.3 x 10^9/L; protein 37 g/L). Aerobic cultures of peritoneal fluid were negative.

Transvaginal aspiration of the mass using an 18 gauge 8.89 cm spinal needle and biopsy using a disposable biopsy needle (Trucut, Baxter Corporation, Moncton, New Brunswick) were performed on two separate occasions. Smears of the aspirate revealed a moderate number of rod-shaped, pleomorphic bacteria with occasional neutrophils. Aerobic bacterial cultures were negative. Histologically, the biopsy samples obtained on both occasions consisted of fibrous connective tissue with a few inflammatory cells. Differential diagnoses included hematoma, seroma, capsule of an abscess, and fibrosarcoma.

Cystoscopic examination of the bladder was done. The mucosa overlying the mass was edematous but not ulcerated. The mass seemed to compress the cranial aspect of the bladder resulting in decreased bladder capacity. Microscopic evaluation of biopsies of the abnormal edematous bladder mucosa obtained via cystoscopy revealed transitional cell hyperplasia and moderate edema within the lamina propria. The presence of bacteria and some inflammatory cells in fluid aspirated from the mass, and absence of malignant cells in biopsy specimens, made a diagnosis of abdominal abscess more likely than neoplasia.

A standing left flank exploratory laparotomy was performed in order to further explore and character-
ize the mass. Four hundred mg xylazine (Xylamax, MTC Pharmaceuticals, Cambridge, Ontario) and 200 mg morphine (Morphine Sulphate Injection BP, Glaxo, Toronto, Ontario) were administered intravenously to sedate the horse and lidocaine was infiltrated into the surgical site. A firm mass was palpated on the left side of the bladder. The mass extended from the cranial aspect of the bladder to the ventral pelvic floor and was firmly adherent to the pelvic flexure of the large colon. Biopsies of the mass were obtained using a biopsy forceps with cutting jaws. Histological examination revealed fibrous connective tissue, adipose tissue, and occasional mononuclear inflammatory cells.

During the eight day hospitalization period, the mare continued to exhibit stranguria, inappetance, and mild colic. Treatment with flunixin meglumine (1 mg/kg intravenously every 24 hours) was instituted to minimize discomfort. Antibiotic therapy for a possible intra-abdominal abscess consisted of trimethoprim-sulfa (Aposulfatrim, Apotex Inc., Weston, Ontario) at 30 mg/kg per os q12h.

Following surgical exploration, therapeutic options included continuation of antibiotic therapy for an extended period of time or attempted surgical excision of the mass and resection of the adherent large colon. Both options carried a guarded prognosis for successful outcome. Because the mare was in constant discomfort and was anorexic unless analgesics were administered daily, the owner elected euthanasia.

The major postmortem finding was an approximately 12 cm diameter mass, firmly attaching the serosal surface of the pelvic flexure of the large colon to the cranial aspect of the bladder (Figure 1). The mass was composed of a 1 cm thick fibrous connective tissue capsule which contained a yellow malodorous material intermixed with colonic contents. There was a 3 cm diameter communication between this mass and the mucosa of the pelvic flexure. The surrounding 8 cm of pelvic flexure mucosa was ulcerated with fibrinous material attached. The mucosal surface of the cranial aspect of the bladder was edematous, folded, and congested.

Disorders of the urinary bladder are relatively uncommon in horses (2). Reported conditions of the bladder in horses include cystic calculi, cystitis, eversion of the urinary bladder, rupture of the urinary bladder, and neoplasia (3). The case reported herein was unusual in that a colonic ulcer resulted in abscess formation and adhesions to the urinary bladder, eventually causing clinical signs that suggested urinary tract disease. The cause of the colonic ulceration was unknown. Toxic doses of nonsteroidal anti-inflammatory drugs have been reported to cause ulceration of the right dorsal colon (4). However, in this mare ulceration involved the left colon and there was no history of chronic use or exposure to toxic doses of nonsteroidal anti-inflammatory drugs. Other possible causes of ulceration in the left dorsal colon include a previous thromboembolic episode, enterolith or foreign body (5), or colonic impaction (5,6).

Perforation of bowel in the horse most commonly results in diffuse peritonitis because the small size of the equine omentum has limited ability to wall off peritoneal contamination (6). In this mare, peritonitis was localized rather than diffuse. This could have occurred if the area of mucosal ulceration in this case was very focal and/or if the ulceration progressed gradually, allowing enough time for fibrin deposition, adhesion formation, and development of localized peritonitis.

Differentiation between intra-abdominal abscesses and neoplasms in horses is not always a straightforward process. This case was no exception. Prolonged fever, response to treatment with antibiotics, and presence of an inflammatory leukogram were indicative of an intra-abdominal abscess. However, these signs can also occur in cases of abdominal neoplasia (7). With both intra-abdominal abscesses and neoplasms, peritoneal fluid is commonly found to be an exudate, since both processes result in inflammation of the peritoneum (7). Unless malignant cells are recovered, which is rare, it is very difficult to differentiate between the two conditions. In addition, bacteria are often not cultured from horses with peritonitis. This has been attributed to the bacteriostatic effect of peritoneal fluid (8). The fact that bacteria were seen but never cultured from peritoneal fluid or the transvaginal aspirates of the mass in this horse may have been the result of previous antibiotic therapy or failure to perform anaerobic cultures.

Close association between the vaginal wall and the abdominal mass in this horse enabled us to safely obtain fluid and tissue samples for histological evaluation and bacterial culture. Although these samples did not provide a definitive diagnosis, this technique can be utilized to ascertain the cause of pelvic masses in horses.

This case demonstrates that adhesions between the gastrointestinal tract and urinary bladder should be considered as a cause of abnormal urination in horses in addition to those already cited in the literature.
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References

*BOOK REVIEW*

**REVUE DE LIVRE**


This book is an atlas of lesions that may be encountered during the inspection of animals for meat. Cattle and swine are the predominant species represented, but sheep, horses, and rabbits are also included. Of the 21 chapters in the book, 13 describe and illustrate various lesions and conditions of importance to meat inspection, which are catalogued mainly by body system (cardiovascular, urinary, etc.). There are also chapters on neoplasia, mineral deposits, specific infectious diseases, foreign animal diseases, hazards of meat, and, finally a chapter on hazard analysis and critical control points.

The best thing about this book is the liberal use of color photographs. There are 355 cases with 646 illustrations, most of which are of gross lesions detected at slaughter. Many of the conditions are illustrated with a series of photos that begins in the ante-mortem states, carries on through post-mortem, and finishes with the microscopical examination. Illustrations are accompanied by a brief text that frequently includes clinical findings on ante-mortem inspection; a description of lesions and bacterial culture results, when applicable; and “disposition”, the decision made with respect to the suitability of the animal for human food.

The last four chapters of the book (foreign animal diseases, hazards of meat, food safety, implications for public health, hazard analysis and critical control points) appear to have been added to expand the scope and relevance of the book. The idea is a good one, but only about 30 pages (including many photographs) are allotted to these chapters and the topics are dealt with superficially or incompletely.

The omission of poultry and, for that matter, fish is regrettable. Some of the photographs are of poor quality, and arrows should have been used much more frequently to assist the reader in identification of lesions and tissues. The introductory text of each chapter is largely un referenced and suggested reading lists are dated and sometimes unbalanced. For example, there are rather lengthy discussions of pulmonary defense mechanisms and lymphatic physiology, but there is comparatively little description of the gross lesions of septicemia, the disease process for which many of the animals in the book were condemned. The suggested reading list for the hemopoietic system contains over 30 pre-1976 citations on lymphatic form and function, yet Ladd’s more relevant and excellent atlas of lymph node pathology in cattle (1) is not included.

It is as an atlas of anatomical meat inspection pathology that this text is recommended. In this respect, it is an improvement on most of the existing works in the field, although the recent atlas by Gil and Durao (2) is comparable. Veterinarians and others engaged in meat inspection should profit from the case presentations. Veterinary students will find it useful to see lesions that are encountered in meat packing plants, but rarely or never seen in university postmortem room accessions.

References

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