Pakistan Veterinary Journal

ISSN: 0253-8318 (PRINT), 2074-7764 (ONLINE)
Accessible at: www.pvj.com.pk

CASE REPORT

Diagnostic Laparoscopy for Small Intestinal Intussusception in a Horse

P. Holak, M. Jałyński, Z. Peczyński, Z. Adamiak, M. Jaskólska and W. Pesta*

University of Warmia and Mazury, Faculty of Veterinary Medicine, Department of Surgery and Roentgenology, 10-719 Olsztyn, ul. M. Oczapowskiego 14c, Poland
*Corresponding author: piotr-holak@wp.pl

ARTICLE HISTORY

Received: April 04, 2012
Revised: July 02, 2012
Accepted: July 30, 2012

Key words:
Biopsy
Colic
Horse
Laparoscopy

ABSTRACT

Laparoscopy is a low-invasive diagnostic and surgical technique for examining and performing surgical procedures in the equine peritoneal cavity. This article is a case study of a horse with weakly expressed, irregular symptoms of colic occurring over a period of four weeks. Diagnostic laparoscopy was performed, and liver and spleen tissue samples were collected for a histopathological analysis. An endoscopic examination of the abdominal cavity ruled out small intestinal intussusception, and a histopathological analysis supported the identification of the causes of colic.

©2012 PVJ. All rights reserved

To Cite This Article: Holak P, M Jałyński, Z Peczyński, Z Adamiak, M Jaskólska and W Pesta, 2013. Diagnostic laparoscopy for small intestinal intussusception in a horse. Pak Vet J, 33(1): 128-130.

INTRODUCTION

Diagnostic and surgical laparoscopy is gaining widespread popularity in equine surgery (Caron, 2009; Tuohy *et al*., 2009; Carmalt and Wilson, 2011). Endoscopic imaging of the intraperitoneal space enables an evaluation of abdominal organs under magnification and in real colors which is an unquestioned advantage in the diagnosis of various diseases. Laparoscopy supports highly precise and targeted collection of tissue samples from any abdominal organ for histopathological examination, thus expanding the scope and the diagnostic value of the test. Laparoscopy is an effective alternative to conventional diagnostic laparotomy because it delivers shorter convalescence times and a lower risk of complications due to less extensive post-operative wounds (Pader *et al*., 2011).

History: A 10-year-old gelding of the Wielkopolska breed with colic symptoms was referred for treatment to the Department of Surgery and Roentgenology, Faculty of Veterinary Medicine, the University of Warmia and Mazury. The horse participated in sports competitions, and it had been previously treated for an orthopedic injury for three months. An interview with the owner revealed weakly expressed colic symptoms, decreased appetite, reluctance to move and body weight drop in the previous four weeks. The physician could not be contacted, and the type of treatment was not determined. According to the owner, the treatment was effective, the horse had been reinstated to competitions, it was regularly vaccinated, dewormed and provided with an adequate nutritional regime.

During the animal's stay in the clinic, weakly expressed colic symptoms were observed on two occasions. In view of the symptoms, the horse's relatively satisfactory condition and the clinic's previous experience in dealing with cases of the type, a decision was made to perform diagnostic laparoscopy on suspicion of small intestinal intussusception.

Clinical examination: The results of standard blood morphology and biochemistry tests did not reveal any irregularities, except for slightly elevated levels of lactate dehydrogenase (LDH) and alkaline phosphatase (ALP) activity. Rectal and ultrasonographic examinations did not show any irregularities.

The horse was fasted for 24 hours and premedicated with 0.03 mg/kg acepromazine and 0.03 mg/kg buthorphanol i.v. A mixture of 2 mg/kg ketamine and 0.1 mg/kg diazepam i.v. was administered for casting. The horse was anesthetized with halothane at a concentration of 1.5% administered with oxygen as a carrier. The patient was positioned in dorsal recumbency, and the operating field was set up in accordance with the applicable standards. The procedure was carried out using a laparoscope with a diameter of 10 mm, working length of 320 mm and 30° angle view.

Pneumoperitoneum with a pressure of 10 mm Hg was created using the Veress needle, and an optical port was introduced in the ventral midline of the umbilical region. The appearance of the parietal peritoneum was assessed, and starting from the cranial abdomen, the laparoscope was moved from the left to the right side of the abdominal cavity to examine the organs. The laparoscope was further

manipulated to evaluate visible organs in the caudal abdomen. Two working ports were inserted in the midline plane of the abdominal cavity in a triangular fashion. Babcock clamps were advanced via the ports to manipulate and examine jejunal loops. A tissue sample was collected from the right liver lobe tissue using a Tru-Cut biopsy needle inserted into the right flank in the sixteenth intercostal space. Spleen biopsy was performed from the left side in the sixteenth intercostal space.

Pneumoperitoneum was gradually reduced, working ports were retracted and the optical port was withdrawn. Port wounds were closed with two layers of absorbable suture material 2-0. Post-operative analgesic therapy was not administered; antibiotic cover was provided using Penicillin LA comprising 6.5 mg/kg procaine benzylpenicillin and 4.5 mg/kg benzathine benzylpenicillin in deep intramuscular injection.

Diagnosis and differential diagnosis: The examination of jejunal loops did not reveal any changes suggesting intussusception. The liver contour was enlarged with rounded lobe edges. An enlarged spleen was also observed. Tissue samples were collected from both organs for a histopathological analysis. The collected specimens were fixed in 10% formalin, embedded in paraffin blocks, and the resulting microtome sections were stained with hematoxylin and eosin. The histopathological test revealed normal spleen structure, and parenchymatous degeneration of hepatocytes was noted in the liver with focal mononuclear cell infiltration (Fig. 1).

Treatment adopted: Based on the results of histopathological tests, the patient was referred for internistic treatment. Weak colic symptoms were observed on two more occasions in the course of one week, after which they ceased. Increased appetite and greater mobility were noted following changes in the animal's diet. The causes of parenchymatous degeneration of hepatocytes were not determined. Colic symptoms first appeared towards the end of the three-month pharmacological treatment of an orthopedic injury, suggesting that the administered drugs had an adverse effect on the liver.

DISCUSSION

Equine laparoscopy is becoming a popular technique in diagnosing abdominal cavity diseases. The most frequent indications for laparoscopy include: a detailed examination of changes diagnosed with the use of other tests (ultrasonographic, rectal examinations) that failed to fully explain the nature of the noted changes, tissue sampling for histopathological tests, chronic colic of unknown etiology, confirmation of neoplastic changes, peritoneal inflammations and bowel damage prior to euthanasia **(**Caron, 2009; Cribb and Boure´, 2010**).** As every method, laparoscopy delivers a number of advantages, but it also introduces certain constraints on the diagnostic procedure. One of its greatest advantages is the option of performing the diagnosis on a standing animal with right or left flank access. In this position, complications resulting from dorsal recumbency and general anesthesia can be avoided, although possible movement of the patient during the procedure could lead

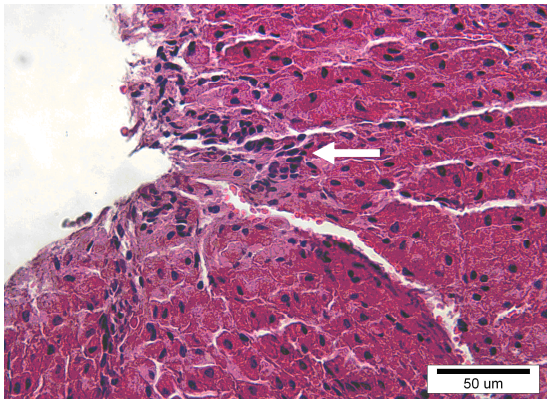

Fig. 1: Parenchymatous degeneration of hepatocytes with small focal infiltrations by mononuclear cells (white arrow). H & E stain.

to certain problems. The advantage of dorsal recumbency is that the procedure can be directly switched to conventional laparotomy, which is not possible in a standing position, and that the patient is fully immobilized. General anesthesia, pneumoperitoneum and the Trendelenburg position could have an adverse effect on the patient's cardiovascular and ventilatory parameters, which is why a respirator should always be applied when examining the patient in this position **(**Carmalt and Wilson, 2011**)**

Optical port access is created subject to the site of the suspected pathological change, but the point of access can be modified in patients placed both in the standing and the recumbent position to examine other parts of the peritoneal cavity **(**Cribb and Boure´, 2010**).** In the analyzed case, two working ports had to be introduced for advancing clamps that facilitated the manipulation of jejunal loops. The patient was placed in the reverse Trendelenburg position (head upwards) for better access to liver lobes. The right flank position was adopted to expose the spleen. The optical port was placed in the umbilical region to control tissue collection from both organs. The retraction of the biopsy needle from the liver and the spleen resulted in minimal bleeding which soon ceased. The time of the laparoscopic procedure, including liver and spleen biopsy, was 45 minutes.

The applied laparoscope with a working length of 320 mm was adequate for the procedure, yet in the author's opinion, a longer laparoscope should be used for better results. The 30° angle view seems to be optimal for diagnostic laparoscopy because it facilitates precise examination of the organs. Insufflation pressure of 10 mm Hg was sufficient to lift the abdominal integument and perform the examination

The samples collected for histopathological analyses under laparoscopic control constitute highly valuable material because they are collected from the precise location showing pathological changes. Direct visualization of the biopsy or sampling site supports the determination of the degree of hemorrhaging and enables bleeding control which is not possible in biopsies performed under ultrasonographic control. Diagnostic laparoscopy also produces less extensive wounds than conventional laparotomy. The wounds created by laparoscopic ports are minimal which speeds up their healing, reduces post-operative pain, the risk of

complications and shortens convalescence time (Carmalt and Wilson, 2011; Pader *et al*., 2011). Although it requires extensive skill and experience on behalf of surgical personnel as well as specialist, expensive equipment, laparoscopy offers a highly effective and safe diagnostic tool.

REFERENCES

Carmalt JL and DG Wilson, 2011. Laparoscopic cryptorchidectomy-standing or recumbent? Equine Vet Educ, 23: 396-397.

Caron JP, 2009. Equine laparoscopic surgery: Here to stay? Equine Vet Educ, 21: 301-302.

Cribb NC and LP Boure, 2010. Laparoscopic removal of a large abdominal testicular teratoma in a standing horse. Vet Surg, 39: 131-135.

Pader K, LJ Freeman, PD Constable, CC Wu, PW Synder and TB Lescun, 2011. Comparison of transvaginal natural orifice transluminal endoscopic surgery (NOTES®) and laparoscopy for elective bilateral ovariectomy in standing mares. Vet Surg, 40: 998-1008.

Tuohy JL, DA Hendrickson, SM Hendrix and TC Bohanon, 2009. Standing laparoscopic repair of a ruptured urinary bladder in a mature draught horse. Equine Vet Educ, 21**:** 257-261.