SEVEN
publicações acadêmicas

CASE REPORT: USE OF INTRAPERITONEAL CEFTRIAXONE IN THE PREVENTION OF PERITONITIS IN A MARE WITH RUPTURED RECTUM

RELATO DE CASO: USO DE CEFTRIAXONA INTRAPERITONEAL NA PREVENÇÃO DE PERITONITE EM ÉGUA COM RUPTURA DE RETO

REPORTE DE CASO: USO DE CEFTRIAXONA INTRAPERITONEAL EN LA PREVENCIÓN DE LA PERITONITIS EN UNA YEGUA CON RUPTURA DE RECTO

https://doi.org/10.56238/sevened2025.029-097

Lívia Rodrigues Mendes[1], Pedro Guimarães Lage[2], Clara de Almeida Mota Pires[3], Marielly Maria Almeida Moura[4], Daniel Ananias de Assis Pires[5], Otaviano de Souza Pires Neto[6], Renê Ferreira Costa[7], Juliano Santos Siqueira[8], Maria Eduarda Ramalho Lopes[9], Maria Dulcinéia da Costa[10], Amanda Cunha Araújo[11], Matheus Pereira da Silva[12], Emerson Márcio Gusmão[13], Fabiane de Paula Carvalho Costa[14], Nysa Neves Alves[15], Maria Cecilia Silva Fonseca[16], Maria Júlia Ribeiro Magalhães[17]

[1] Graduated in Veterinary Medicine. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: livia.mende@soufunorte.com.br
[2] Master in Animal Science. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: pedro.lage@funorte.edu.br
[3] Master in Animal Science. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: clara.pires@funorte.edu.br
[4] Dr. in Plant Production. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: maryszootecnia@gmail.com
[5] Dr. in Animal Production. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: piresdaa@gmail.com
[6] Dr. in Animal Production. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: otaviano.neto@funorte.edu.br
[7] Doctorate n Animal Production. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: renecostavet@gmail.com
[8] Master in Animal Production. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: juliano.siqueira@funorte.edu.br
[9] Graduated in Veterinary Medicine. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: Maria.lopes@soufunorte.edu.br
[10] Dr. in Animal Science. Universidade Estadual de Montes Claros (Unimontes).
E-mail: maria.costa@unimontes.br
[11] Graduated in Veterinary Medicine. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: amanda.araujo@soufunorte.edu.br
[12] Master in Animal Production. Universidade Estadual de Montes Claros (Unimontes).
E-mail: matheuspereiraagrohorse@gmail.com
[13] Master in Animal Biology. Universidade Estadual de Montes Claros (Unimontes).
E-mail: Emerson.gusmao@unimontes.br
[14] Undergraduate student in Veterinary Medicine. Centro Universitário Uma.
E-mail: fabiana.costa@una.edu.br
[15] Undergraduate student in Veterinary Medicine. Centro Universitário Uma.
E-mail: nysa.alves@una.edu.br
[16] Graduated in Veterinary Medicine. Faculdades Integradas do Norte de Minas (Funorte).
E-mail: maria.fonseca@soufunorte.edu.br
[17] Master's student in Animal Production. Universidade Federal de Minas Gerais (UFMG).
E-mail: mariajulia25032000@gmail.com

ABSTRACT
This report describes the treatment of a two-year-and-seven-month-old Quarter Horse mare diagnosed with grade III rectal rupture after reproductive manipulation. The initial approach suggested corrective surgery with a colostomy, but the owner's refusal led the team to conservative treatment. The protocol included fluid therapy, analgesia, systemic support, and antibiotic administration, with emphasis on the introduction of ceftriaxone intraperitoneally at a dose of 50 mg/kg/day for five days to prevent the onset of septic peritonitis. The treatment was well tolerated and resulted in significant clinical improvement, with recovery of intestinal motility, hematologic normalization, and clinical stabilization. The adopted approach, although alternative, proved effective, with ceftriaxone being a promising resource for controlling abdominal infections in severe non-surgical cases.

Keywords: Rectal Rupture. Conservative Treatment. Intraperitoneal Ceftriaxone.

RESUMO
O presente relato descreve o atendimento a uma égua Quarto de Milha com dois anos e sete meses, diagnosticada com ruptura retal grau III após manipulação reprodutiva. A abordagem inicial indicava cirurgia corretiva com colostomia, mas a recusa do tutor direcionou a equipe para um tratamento conservador. O protocolo incluiu fluidoterapia, analgesia, suporte sistêmico e administração de antibióticos, com destaque para a introdução da ceftriaxona por via intraperitoneal na dose de 50 mg/kg/dia por cinco dias, visando prevenir a instalação de peritonite séptica. O tratamento foi bem tolerado e resultou em melhora clínica significativa, com recuperação da motilidade intestinal, normalização hematológica e estabilização clínica. A conduta adotada, embora alternativa, mostrou-se eficaz, sendo a ceftriaxona um recurso promissor na contenção de infecções abdominais em casos graves não cirúrgicos.

Palavras-chave: Ruptura Retal. Tratamento Conservador. Ceftriaxona Intraperitoneal.

RESUMEN
Este informe describe el tratamiento de una yegua Quarter Horse de dos años y siete meses de edad, diagnosticada con ruptura rectal de grado III después de manipulación reproductiva. El enfoque inicial sugirió cirugía correctiva con una colostomía, pero la negativa del propietario llevó al equipo a un tratamiento conservador. El protocolo incluyó fluidoterapia, analgesia, soporte sistémico y administración de antibióticos, con énfasis en la introducción de ceftriaxona intraperitoneal a una dosis de 50 mg/kg/día durante cinco días para prevenir la aparición de peritonitis séptica. El tratamiento fue bien tolerado y resultó en una mejoría clínica significativa, con recuperación de la motilidad intestinal, normalización hematológica y estabilización clínica. El enfoque adoptado, aunque alternativo, resultó efectivo, siendo la ceftriaxona un recurso prometedor para controlar las infecciones abdominales en casos graves no quirúrgicos.

Palabras clave: Rotura Rectal. Tratamiento Conservador. Ceftriaxona Intraperitoneal.

1 INTRODUCTION

Rectal rupture in horses, especially in mares, represents a highly complex and potentially fatal veterinary medical emergency, often associated with obstetric manipulations. This condition, although relatively rare, has a high mortality rate, mainly due to the potential for fecal contamination of the abdominal cavity and subsequent development of septic peritonitis (Smith, 2009; Fubini & Ducharme, 2004).

The equine rectum is a tubular structure of the large intestine, about 30 to 50 cm long, that extends from the descending colon to the anal canal. It is located dorsally to the vagina in females or to the bladder in males (Dyce, Sack & Wensing, 2010). Its constitution includes longitudinal and circular muscle layers, as well as a richly vascularized and innervated mucosa, making it susceptible to injury, especially in the face of abrupt increases in intraluminal pressure or traumatic manipulations. The proximity to pelvic structures and the tissue fragility of some mares contribute to the vulnerability of this region (Dugdale, 2010).

Ruptures are classified into four grades: grade I is restricted to the mucosa; grade II reaches the muscle layer without complete perforation; grade III implies total rupture of the rectal wall up to the serosa; and grade IV represents a direct communication between the rectal lumen and the peritoneal cavity, often with frank fecal contamination (Rakestraw, Hardy & Robertson, 2002).

Predisposing factors include dystocia, excessive handling force, animal resistance, and poor lubrication (Vaala & House, 2002). Septic peritonitis is the most feared complication, characterized by an intense cytokine-mediated inflammatory response, increased capillary permeability, accumulation of inflammatory exudate, and imminent risk of endotoxemia, shock, and multiple organ failure (Hassel, 2007; De Notaris *et al.*, 2011).

Early diagnosis of rectal rupture involves careful digital inspection, with abundant lubrication and sedation of the animal. Confirmation of peritonitis can be made by transabdominal ultrasonography and analysis of peritoneal fluid, whose suggestive findings include a cloudy appearance, presence of degenerated neutrophils, and intracellular bacteria (Latson et al., 2001; Freeman, 2014).

Therapeutic management depends on the severity of the injury. While grade I and II tears can be treated conservatively with dietary restriction, fluid therapy, analgesia, and antibiotic therapy, grade III and IV cases often require surgical approach, including debridement, suturing of the rectal wall, and, when necessary, temporary colostomy (Rakestraw *et al*., 2002). Traditionally, antibiotic protocols involve the combination of penicillin

with gentamicin and/or metronidazole, aiming at broad coverage against Gram-positive, Gram-negative, and anaerobic bacteria (Wilson, 2006). However, more recently, intraperitoneally administered ceftriaxone has gained prominence as an effective and safe alternative in the control of peritonitis, a complication often associated with severe rectal ruptures.

Study conducted by Alonso *et al.* (2018) demonstrated that intraperitoneal administration of ceftriaxone at a single dose of 25 mg/kg promotes therapeutic concentrations higher than the MIC value in peritoneal fluid for up to 24 hours and in plasma for up to 12 hours. In addition to reaching high pharmacological levels in the infectious focus, it presents excellent clinical tolerance, being considered one of the few viable options for direct administration into the abdominal cavity in horses. The concept of local antibiotic administration is supported by sound pharmacological principles. Intraperitoneal application allows the drug to act directly at the interface between the infectious focus and the inflamed tissues, favoring rapid antimicrobial action and reducing the risk of therapeutic failure associated with impaired perfusion of the region (Hassel, 2007; AAEP, 2022).

The combined therapeutic approach of intraperitoneal ceftriaxone and systemic support thus offers a promising alternative in the control of peritonitis, especially in cases at high risk, such as the grade III rectal rupture observed in this case. The strategic use of ceftriaxone, in addition to early intervention, laboratory monitoring, and continuous evaluation of clinical response, may represent a significant advance in reducing the mortality associated with this condition, substantially improving the prognosis of these patients.

The systemic pathway (IV gentamicin and Ceftiofur IM) complements, reaching possible translocated or circulating bacteria. This dual approach is supported by peritonitis management guidelines, which recommend comprehensive antimicrobial therapy and early intervention to reduce the risks of in-hospital progression and septic shock (AAEP, 2022; Hassel, 2007). Thus, the association of intraperitoneal ceftriaxone and systemic antimicrobial support offers a coherent and potentially more effective therapeutic strategy in the prevention of peritonitis in animals with rectal rupture. This study therefore seeks to better understand the clinical efficacy of this combination, correlating pharmacokinetic data, clinical response, and laboratory evolution.

2 REPORT

A Quarter Horse mare, two years and seven months old and weighing an estimated 416 kg, was admitted to the veterinary hospital after presenting rectal rupture. The injury occurred during a transrectal palpation procedure, performed in the context of reproductive management, due to the animal's agitation in the containment trunk. Once the injury was noticed, the professional in charge immediately sent the mare to the veterinary hospital.

After admission, rectal palpation allowed the identification of a grade III rectal lesion, located dorsally. Clinically, the patient had a slightly elevated heart rate, reduced intestinal motility, discomfort during defecation, and selective appetite, showing greater interest in grazing than in hay intake. The mucous membranes were hydrated, with capillary filling time within physiological limits, and there were no records of hyperthermia. Peritoneal fluid was collected, which presented a whitish and sticky appearance, with the presence of fibrin, protein of 3.8 g/dL and, on microscopic examination, a significant amount of segmented neutrophils. Ultrasound examination revealed a slight amount of free fluid in the peritoneal cavity, within physiological limits. The intestinal loops had preserved morphology and peristalsis, with no signs of wall dilation or thickening. The peritoneum did not exhibit thickening, collections, or inflammatory signs.

In the initial blood count, a leukocyte count of 13,190/µL was observed, with a predominance of segmented neutrophils, reduced lymphocytes, and a slight increase in rods (Figure 1). This profile is compatible with a shift to the left, indicative of an acute inflammatory response. In view of the severity of the condition and the high risk of progression to peritonitis, endotoxemia, and laminitis, an intensive therapeutic protocol was immediately instituted, focused on inflammation control, multimodal analgesia, circulatory support, and continuous surveillance.

Figure 1

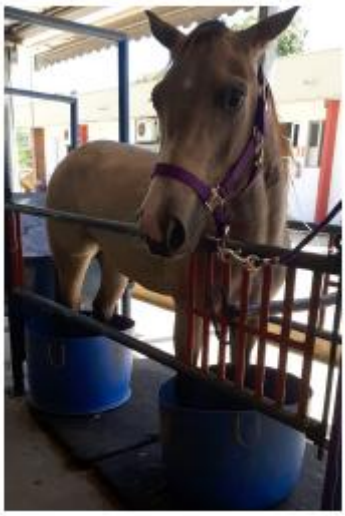
Initial leukogram

Leucograma		
Leucócitos	13,190 /uL	8.000 - 16.000 /uL
Mielócitos	0,00	0 - 0
Metamielócitos	0,00	0 - 0
Bastonetes	2,00	0 - 1
Segmentados	82,00	55 - 70
Linfócitos	10,00	20 - 40
Monócitos	2,00	2 - 8
Eosinófilos	4,00	1 - 6
Basófilos	---	0 - 1
Plaquetas	65,000 /uL	175.000 - 500.000 /uL

Treatment was initiated with vigorous intravenous fluids using crystalloid solutions, in addition to the administration of DMSO (0.5 mg/kg for 3 days), intramuscular ceftiofur (4.4 mg/kg, SID, 7 days), intravenous gentamicin (6.6 mg/kg, SID, 7 days), flunixin meglumine (1.1 mg/kg, TID), pentoxifylline (7.5 mg/kg, BID, orally), and Bionew as metabolic support. In episodes of persistent visceral pain, a positive response was observed to the use of antispasmodics, such as Buscofin® (dipyrone + hyoscine), suggesting an associated intestinal spastic component. To protect the gastrointestinal tract, lansoprazole (1.5 mg/kg, SID, for 30 days), cimetidine (7 mg/kg, QID, for 5 days) and sucralfate (50 mg/kg, QID, for 10 days) were used, administered as clinically needed. Preventive cryotherapy was initiated at the first signs of a digital pulse and maintained for 72 hours, with the aim of preventing the installation of laminitis

Figure 2

Animal submitted to cryotherapy for laminitis prevention



Isolated episodes of hyperthermia occurred, which were promptly reversed with dipyrone and cold baths. At times, the mare presented apathy, temporary feeding refusal and marked discomfort, especially when defecating and urination. In these episodes, fluid therapy, analgesia, and prokinetic support with lidocaine (0.05 mg/kg/minute), calcium (20 ml), and potassium (10 ml) were intensified, all medications diluted in 1L of lactated Ringer's serum. Three days after the beginning of follow-up, the leukogram revealed marked leukopenia (5,970/µL) (Figure 3), interpreted as a reflection of an acute abdominal inflammatory process, with peripheral leukocyte sequestration and cell redistribution. This systemic response signaled an imminent risk of infectious progression, requiring intensive clinical surveillance.

Figure 3

Leukogram showing marked leukopenia

Leucograma

Leucócitos	5,970 /uL	8.000 - 16.000 /uL
Mielócitos	0,00	0 - 0
Metamielócitos	0,00	0 - 0
Bastonetes	0,00	0 - 1
Segmentados	60,00	55 - 70
Linfócitos	30,00	20 - 40
Monócitos	2,00	2 - 8
Eosinófilos	8,00	1 - 6
Basófilos	0,00	0 - 1
Plaquetas	93.000 /uL	175.000 - 500.000 /uL

In view of this hematological condition and the anatomical severity of the rectal rupture, it was decided to start the administration of ceftriaxone intraperitoneally, with the objective of containing a possible bacterial spread before the onset of septic peritonitis. The administration was performed by puncture in the left paralumbar fossa, using aseptic technique, at a dose of 50 mg/kg, once a day, for five consecutive days. The drug was well tolerated, with no signs of local irritation or systemic adverse reactions.

Ultrasounds performed in the days following the start of ceftriaxone therapy did not show excessive accumulation of free fluid in the abdominal cavity. The gastrointestinal structures showed discrete alterations: the gastric walls were thickened, measuring approximately 14.19 mm (Figure 4); there was distension of segments of the small intestine, with decreased peristalsis and heterogeneous echogenicity content (Figure 5).

Figure 4

Gastric wall thickening

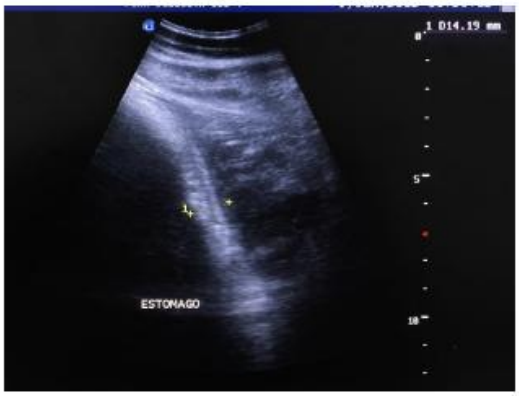
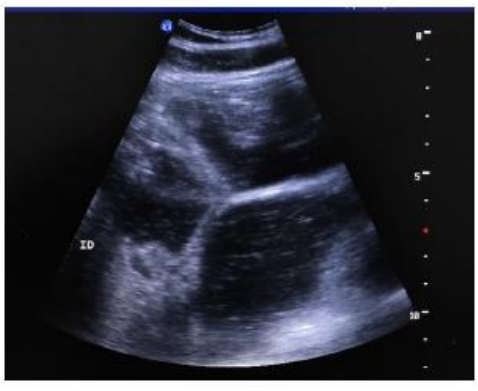


Figure 5

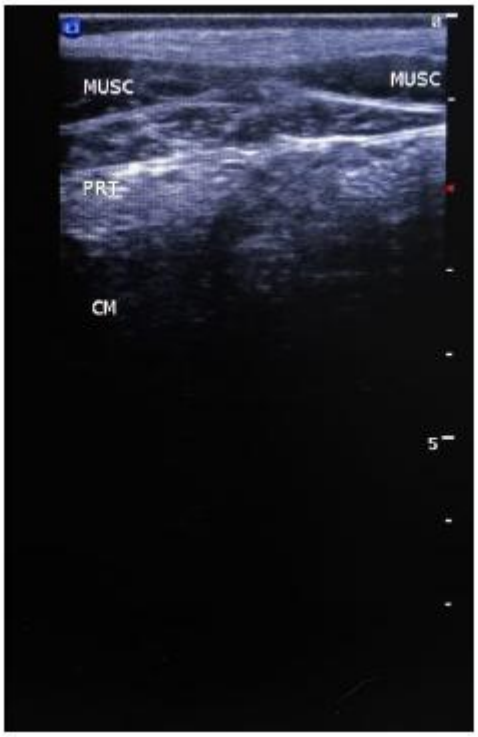
Small Bowel Distension



With the advancement of treatment, especially after the conclusion of the protocol with ceftriaxone, progressive clinical improvement was observed. Intestinal motility was restored, appetite increased, behavior became more responsive, and pain episodes became increasingly sporadic and less intense. The gastrointestinal tract showed consistent echographic improvement: no excessive accumulation of free fluid was observed in the abdominal cavity. The gastrointestinal structures evaluated were preserved, with walls of thickness and echogenicity compatible with physiological patterns, with no evidence of abnormal distension, displacement, or presence of content incompatible with normality. In view of these findings, it is concluded that there is no excess free abdominal fluid and the integrity of the gastrointestinal structures is maintained (Figure 7).

Figure 7

Abdominal ultrasound showing the absence of excess free fluid



From the hematological point of view, the patient evolved from leukopenia to mild leukocytosis (18,760/μL) (Figure 8), interpreted as an effective response of the bone marrow and rebalancing of the inflammatory axis, without clinical or laboratory evidence of secondary complications.

Figure 8

Leukocyte count showing leukocytosis

Leucograma		
Leucócitos	18,760 /uL	8.000 - 16.000 /uL
Mielócitos	0,00	0 - 0
Metamielócitos	0,00	0 - 0
Bastonetes	0,00	0 - 1
Segmentados	60,00	55 - 70
Linfócitos	20,00	20 - 40
Monócitos	8,00	2 - 8
Eosinófilos	2,00	1 - 6
Basófilos	10,00	0 - 1
Plaquetas	154,000 /uL	175.000 - 500.000 /uL

Clinical parameters remained stable throughout hospitalization, with no febrile episodes, adequate hydration, and evident improvement in general well-being. In the last blood count, performed before discharge, the leukocyte count was 13,670/µL (Figure 9), within the values expected for the species, corroborating clinical stabilization. In the final days of hospitalization, the patient remained stable, without the need for antibiotic therapy, with preserved appetite, evacuation with less discomfort and absence of new episodes of significant pain, which reinforced the clinical and laboratory recovery picture.

Figure 9

Leukogram within the expected values for the species

Leucograma		
Leucócitos	13,670 /uL	8.000 - 16.000 /uL
Mielócitos	0,00	0 - 0
Metamielócitos	0,00	0 - 0
Bastonetes	1,00	0 - 1
Segmentados	79,00	55 - 70
Linfócitos	12,00	20 - 40
Monócitos	5,00	2 - 8
Eosinófilos	3,00	1 - 6
Basófilos	0,00	0 - 1
Plaquetas	138,000 /uL	175.000 - 500.000 /uL

The peritoneal fluid maintained physiological characteristics, and the clinical and laboratory signs allowed the gradual reduction of therapies and the transition to outpatient management. The prognosis, initially reserved, came to be considered favorable, given the good response to treatment and the stability maintained for several consecutive days.

3 DISCUSSION

Rectal rupture in horses, especially in mares submitted to reproductive manipulations, represents a clinical challenge of high severity and poor prognosis, especially in grade III and IV cases. The occurrence described in this case is compatible with the literature, which points to transrectal manipulation as one of the main causes of rupture, often associated with agitation, animal resistance and inadequate restraint. According to the protocols established in the literature, grade III and IV rectal ruptures preferentially indicate surgical intervention, both for contamination control and for anatomical repair of the lesion (Fubini & Ducharme, 2004). The initial conduct of the hospital was, therefore, correctly oriented towards surgery, which was the primary indication in view of the imminent risk of septic peritonitis, a complication with a high mortality rate.

However, the mare's owner chose not to authorize the surgical intervention, preferring a conservative management. This decision required increased clinical attention and adjustments in the therapeutic protocol, with a view to compensating for the absence of direct surgical repair of the lesion. It should be noted that, if the colostomy had been performed, it would have involved two surgical moments: the first to divert fecal transit, allowing the rectal wall to heal; the second to undo the colostomy and reestablish the original anatomy. Both stages require time, hospital structure and high cost, factors that may have influenced the choice of tutor.

Despite the absence of surgical intervention, continuous monitoring of clinical status, laboratory tests, and abdominal ultrasonography allowed the early detection of systemic inflammatory changes and signaled the need for aggressive pharmacological intervention, especially with antibiotics with high tissue penetration.

The turning point in the clinical approach of this case was the decision to institute ceftriaxone intraperitoneally, after three days of evolution, motivated by early signs of severe systemic inflammatory response, specifically marked leukopenia (5,970/μL), accompanied by relative elevation of rods and lymphocytes.

Such a hematological profile is compatible with peripheral cell redistribution and possible sequestration of leukocytes in the abdominal cavity, a typical pattern of the initial phases of subclinical septic peritonitis, although the classic signs such as persistent fever, endotoxemia or shock are absent.

Although the traditional literature recommends the combined use of penicillin, gentamicin, and metronidazole as a therapeutic basis (Wilson, 2006), more recent studies

such as the one by Alonso *et al.* (2018) have demonstrated the promising potential of intraperitoneally administered ceftriaxone, for its high efficacy against Gram-negative and Gram-positive bacteria and for reaching concentrations higher than MIC in the peritoneal fluid for up to 24 hours.

In the present case, an intensified dose of 50 mg/kg, SID, was administered for five consecutive days, exceeding the standard protocol (25 mg/kg) proposed in the literature. This choice was justified by the severity of the rectal lesion (grade III), the absence of surgical repair, and the need to contain the possible infectious evolution early. This clinical approach represents a personalized adjustment, based on the pharmacodynamics of the drug and the logic of maintaining prolonged effective levels in the peritoneal environment (Hassel, 2007).

From a pharmacological point of view, the intraperitoneal application of ceftriaxone represents a localized antibiotic therapy strategy, as it allows the drug to act directly at the interface between the infectious focus and the inflamed tissues, promoting faster, more selective, and more intense action. The chemical structure of ceftriaxone, as a third-generation cephalosporin, favors its penetration at sites of inflammation, justifying its use in body cavities even in situations of limited perfusion, as addressed by Papich (2016) "Ceftriaxone has a long half-life, high protein binding, and excellent tissue penetration, especially in inflamed areas, where greater capillary permeability allows larger or more lipophilic molecules to reach the extravascular spaces more effectively".

In addition to the local action of ceftriaxone, the therapeutic protocol included intravenous gentamicin (6.6 mg/kg) and intramuscular ceftiofur (4.4 mg/kg), which ensured systemic antimicrobial coverage against circulating or translocated pathogens, thus composing an antibiotic strategy at multiple levels — local and systemic — as guided by the AAEP guidelines (2022) for cases at risk of peritonitis.

In clinical response to therapy, there was progressive normalization of the leukogram, with transition from leukopenia to a mild leukocytosis (18,760/μL), followed by stabilization in physiological values (13,670/μL). This hematological rebalancing was accompanied by significant clinical improvement: normalization of intestinal motility, reduction of pain on defecation, recovery of appetite, return of behavioral responsiveness, and disappearance of signs of systemic inflammation.

The therapeutic efficacy was also confirmed by ultrasonographic examinations, which demonstrated the absence of excess free fluid, disappearance of intestinal distension, normalization of peristalsis, and echogenicity of the gastrointestinal walls compatible with

physiology. These findings support the conclusion that full septic peritonitis did not set in, despite the high risk.

Therefore, the early and targeted administration of intraperitoneal ceftriaxone, in association with broad systemic therapy and intensive clinical support, was decisive to avoid progression to an installed peritonitis. Its efficacy in this case reinforces its potential not only therapeutic, but also preventive, offering a promising alternative in high-risk clinical situations.

The absence of classic clinical signs of peritonitis (such as persistent fever, tachycardia, endotoxemia, or septic shock) throughout the treatment reinforces the effectiveness of the approach. In addition, the clinical management of this case evidenced an effective integration between different pillars of veterinary intensive medicine, articulating hemodynamic support measures, inflammatory control, target organ protection, and continuous diagnostic surveillance.

Fluid therapy with crystalloid solutions was instituted in order to ensure circulatory stability and the maintenance of tissue perfusion, a fundamental strategy in view of the imminent risk of endotoxemia in horses (Hassel, 2007; McKenzie, 2011). To control pain and the inflammatory response, flunixin meglumine, a non-steroidal anti-inflammatory drug widely indicated in large animals, was used. Its efficacy, both in visceral analgesia and in modulating the cascade of inflammatory mediators induced by bacterial endotoxins, is well established in the literature, especially in the studies by Lees et al. (2004).

The association between DMSO (dimethylsulfoxide) and pentoxifylline also proved to be a rational choice, since both exert anti-inflammatory and antioxidant action, in addition to contributing to the improvement of microcirculation. In the case of pentoxifylline, its ability to increase the deformability of erythrocytes and reduce leukocyte adhesion to the vascular endothelium stands out, which are relevant aspects in the context of systemic inflammation and in the prevention of laminitis, as pointed out by Hammond et al. (2002).

Preventive cryotherapy of the hooves, initiated in the first hours of hospitalization and maintained for 72 hours, was integrated into the protocol as a valuable prophylactic measure. Thermal reduction in laminar tissues promotes vasoconstriction and inhibition of degenerative enzymatic processes associated with laminitis secondary to endotoxemia, as described by van Eps and Pollitt (2006), and is one of the most recommended practices in cases with high systemic inflammatory risk.

The protection of the gastric mucosa was also contemplated, with the combined administration of lansoprazole, cimetidine and sucralfate, an indispensable measure in

critically ill patients under metabolic stress, risk of splanchnic hypoperfusion and prolonged use of anti-inflammatory drugs given the high incidence of gastric ulcers in hospitalized horses (Murray, 1999).

Therapeutic follow-up included intensive monitoring with serial blood counts and abdominal ultrasounds, practices that are essential for the early detection of inflammatory changes and the evaluation of the clinical response to treatment, according to the guidelines for veterinary clinical management for patients at risk of peritonitis (Freeman, 2014).

This clinical case represents a significant example of how individualized therapeutic decision-making responsive to clinical status can be as effective as the traditional protocol, as long as it is carefully substantiated. Grade III rectal rupture, whose standard approach would be surgical intervention with temporary colostomy, was successfully managed through an intensive conservative regimen, made possible by rigorous clinical surveillance and the strategic use of intraperitoneal ceftriaxone as a preventive resource for peritonitis.

4 CONCLUSION

The use of intraperitoneal ceftriaxone has been shown to be an effective measure in containing peritoneal inflammation and preventing septic complications, contributing significantly to the patient's recovery.

The positive clinical response observed throughout the treatment with hematological stabilization, behavioral improvement, restoration of intestinal motility, and absence of signs of peritonitis, reinforces the potential of this approach as a valid alternative in high-risk settings. This report, therefore, broadens the understanding of the clinical applicability of local therapies associated with systemic support in large animals, especially in contexts that require precision, vigilance, and rapid response.

REFERENCES

Alonso, M. A., et al. (2018). Pharmacokinetics of ceftriaxone after intraperitoneal administration in horses. Journal of Veterinary Pharmacology and Therapeutics, 41(2), 205–212.

American Association of Equine Practitioners (AAEP). (2022). Guidelines for the management of peritonitis in horses. Lexington, KY: AAEP.

De Notaris, M., et al. (2011). Diagnosis and management of peritonitis in equines. The Veterinary Clinics of North America: Equine Practice, 27(1), 171–187.

Dugdale, A. H. A. (2010). Veterinary anaesthesia: Principles to practice. Wiley-Blackwell.

Dyce, K. M., Sack, W. O., & Wensing, C. J. G. (2010). Tratado de anatomia veterinária (4th ed.). Rio de Janeiro, Brazil: Elsevier.

Freeman, D. E. (2014). Clinical approach to peritonitis in horses. Equine Veterinary Education, 26(6), 305–313.

Fubini, S. L., & Ducharme, N. G. (2004). Farm animal surgery. Philadelphia, PA: Saunders.

Hammond, C. J., et al. (2002). Use of pentoxifylline in equine medicine. Equine Veterinary Journal, 34(5), 494–498.

Hassel, D. M. (2007). Evaluation and management of acute colitis in horses. The Veterinary Clinics of North America: Equine Practice, 23(3), 543–564.

Hubbell, J. A. E., & Muir, W. W. (2009). Equine anesthesia: Monitoring and emergency therapy (2nd ed.). Saunders.

Latson, K. M., et al. (2001). Peritoneal fluid analysis in horses with acute abdominal disease. Journal of Veterinary Internal Medicine, 15(6), 569–573.

Lees, P., et al. (2004). Pharmacodynamics and pharmacokinetics of flunixin in horses. Equine Veterinary Journal, 36(4), 369–374.

Murray, M. J. (1999). Gastric ulcers in adult horses. Compendium on Continuing Education for the Practicing Veterinarian, 21(8), 682–692.

Papich, M. G. (2016). Saunders handbook of veterinary drugs: Small and large animal (4th ed.). St. Louis, MO: Elsevier.

Rakeshaw, L. L., Hardy, J., & Robertson, J. T. (2002). Large animal surgery (3rd ed.). St. Louis, MO: Mosby.

Smith, B. P. (2009). Large animal internal medicine (4th ed.). St. Louis, MO: Mosby Elsevier.

Vaala, W. E., & House, J. K. (2002). Equine perinatology. Veterinary Clinics of North America: Equine Practice, 18(1), 199–219.

Van Eps, A. W., & Pollitt, C. C. (2006). Equine laminitis: Cryotherapy reduces the severity of acute laminitis in the horse. Equine Veterinary Journal, 38(5), 410–414.

Wilson, D. A. (2006). Medical treatment of peritonitis in horses. In B. P. Smith (Ed.), Large animal internal medicine (4th ed., pp. 806–810). St. Louis, MO: Elsevier.