

Clinical evolution of pleuropneumonia in a foal treated with ceftiofur as the single antibiotic: case report**Evolução clínica da pleuropneumonia em um potro tratado com ceftiofur como único antibiótico: relato de caso**

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Iaciara Luana de Xavier Albernaz

Bacharel em Medicina Veterinária pelo Instituto Federal Goiano - Campus Urutaí
Instituto Federal Goiano - Campus Urutaí
Rodovia Geraldo Silva Nascimento km 2,5 - Campus Urutaí
Urutaí - GO
Email: iaciara_xavier@hotmail.com

Hugo Jayme Mathias Coelho Peron

Doutor em Ciência Animal pela Universidade Federal de Goiás
Instituto Federal Goiano - Campus Urutaí
Rodovia Geraldo Silva Nascimento km 2,5 - Campus Urutaí
Urutaí - GO
Email: hugo.peron@ifgoiano.edu.br

Yoshihara Cristina de Sousa

Bacharel em Medicina Veterinária pelo Instituto Federal Goiano-Campus Urutaí
Instituto Federal Goiano - Campus Urutaí
Rodovia Geraldo Silva Nascimento km 2,5 - Campus Urutaí
Urutaí - GO
Email: yoshiharacsousa@hotmail.com

Daniel Barbosa da Silva

Doutor em Ciência Animal pela Universidade Federal de Goiás
Instituto Federal Goiano - Campus Urutaí
Rodovia Geraldo Silva Nascimento km 2,5 - Campus Urutaí
Urutaí - GO
Email: acessodaniel@hotmail.com

Carla Cristina Braz Louly

Doutora em Ciência Animal pela Universidade Federal de Goiás
Instituto Federal Goiano - Campus Urutaí
Rodovia Geraldo Silva Nascimento km 2,5 - Campus Urutaí
Urutaí - GO
Email: carlalouly@gmail.com

Ana Karolina Camargo

Bacharel em Medicina Veterinária pela Faculdade Objetivo
Médica Veterinária Autônoma
R. MP 12, s/n - Res. Mar Del Plata, Villa Cavalcare
Goiânia - GO
Email: anakvet@gmail.com

Suyan Brethel dos Santos Campos

Mestrado em Ciência Animal pela Universidade Federal de Goiás
Médica Veterinária Autônoma
R. MP 12, s/n - Res. Mar Del Plata, Villa Cavalcare
Goiânia - GO
Email: sauderuralvet@gmail.com

Paloma Coutinho Silva

Bacharel em Medicina Veterinária pela Universidade de Franca
Avenida Alagoas 1452, Jardim Seminário, Franca – SP
Email: palomacout@hotmail.com

ABSTRACT

Pleuropneumonia is a disease often found in equine clinic, characterized by bacterial infection that affects the lungs, the pleura and the pleural liquid. The main clinical symptoms appear in the respiratory system. Treatment was reported of a quarter mile foal, aged 1 month and 20 days, that showed characteristic symptoms of pneumonic diseases. After clinical examination and suspicion of pleuropneumonia, the foal was admitted into the clinic. Laboratory and imagery examinations were requested, which enabled the definitive diagnosis of the disease. Since it was impossible to immediately determine the causing microorganism, sodic ceftiofur antibiotic therapy was applied, given its broad spectrum. Mucolytic, anti-inflammatory, anti-fever and anti-toxic medicines, vitamin supplement, among others were also used. Response to the treatment was quick, leading to improvement of the clinical symptoms and release within 8 days.

Keywords: Cephalosporine, equine, infection.

RESUMO

A pleuropneumonia é uma doença frequentemente encontrada em clínicas equínas, caracterizada por infecção bacteriana que afeta os pulmões, a pleura e o líquido pleural. Os principais sintomas clínicos aparecem no sistema respiratório. Foi relatado tratamento de um potro de 400 metros, com 1 mês e 20 dias, que apresentava sintomas característicos de doenças pneumônicas. Após exame clínico e suspeita de pleuropneumonia, o potro foi internado na clínica. Foram solicitados exames laboratoriais e de imagem, que possibilitaram o diagnóstico definitivo da doença. Como era impossível determinar imediatamente o microorganismo causador, foi aplicada antibioticoterapia com ceftiofur sódico, dado seu amplo espectro. Medicamentos mucolíticos, anti-inflamatórios, anti-febre e antitóxicos, suplemento vitamínico, entre outros também foram utilizados. A resposta ao tratamento foi rápida, levando à melhora dos sintomas clínicos e liberação em 8 dias.

Palavras-chave: Cefalosporina, equino, infecção

1 INTRODUCTION

Pleuropneumonias are diseases related to bacterial infection in the lungs, pleura and pleural liquid. The process usually starts with the bacterial colonization of the lungs and subsequently of the pleura and the pleural space. Fever, depression, lack of appetite, coughing, intolerance to exercises, respiratory difficulty and nasal secretion are characteristic symptoms (RADOSTITS *ET AL.*, 2010). According to Gurjão (2018), the disease is recurrent in equine clinic.

In addition to pneumonia, lung abscesses are often found in pleuropneumonia cases. Microorganisms that constitute the pharynx normal flora, such as *Streptococcus zooepidemicus*, *Escherichia coli*, *Klebsiella sp*, *Pasteurella sp e Bordetella sp* are commonly isolated as causers of the disease. Thorax trauma, neoplasia, and disruption of the esophagus can also be the primary causes of the disease. (REED; BAYLY, 2000).

In foals, immunological alterations are highly relevant for lung-related processes, since they cause reduction of resistance. And animals under one year of age are commonly affected (THOMASSIAN, 2005; RADOSTITS, et al., 2010).

Treatment is based on extraction of excessive pleural liquid, palliative care, and antimicrobial therapy. Antibiotic therapy is very important and must be applied preferably taking into consideration the outcomes of culture and sensitivity. However, in the absence of those, broad spectrum antibiotics must be applied (REED; BAYLY, 2000).

Sodic ceftiofur features as an option in the treatment of respiratory infections in equines. It is a broad spectrum betalactamic antimicrobial, of third generation cephalosporines, taking effect against gram-negative and gram-positive microorganisms (PAPICH, 2012).

Dereti (2003) reported on the need for studies about the use of antibiotics to treat equine respiratory diseases, and Thomassian (2005) claimed that lung diseases are important causes of mortality of foals aged two to six months. In view of this and the importance of antibiotic therapy in the treatment of these diseases, the study and publicity of clinical cases that feature the use of available antimicrobial bases are highly valued.

2 CASE REPORT

On November 21st, 2018, a Quarter Mile foal aged 1 month and 20 days, and weighing 65 kg, was admitted to veterinary clinic Saúde Rural in Goiânia, Goiás. The proprietor reported that the animal presented diarrhea, nasal secretion and apathy.

After identification, anamnesis was carried out, noting that the animal was subjected to an environment with excessive humidity and mud. Next, clinical examination was accomplished, which revealed bilateral mucopurulent secretion, superficial breathing, dyspnea, periocular dermatitis, watery diarrhea, ingurgitation of episcleral vessels, conjunctival jaundice, severe apathy, 39.3°C body temperature, 28 mrpm breathing rate (breathing movements per minute), and 110 bpm heart rate (beats per minute). Auscultation showed pulmonary crackling, wheezes, and bilateral silence in the ventral field.

The clinical condition and the anamnesis raised suspicion of pleuropneumonia. Initially, as complementary tests for a definitive diagnosis, hemogram, kidney and liver biochemistry, and thorax ultrasound were requested.

Admittance was suggested for intensive care, and a treatment protocol was determined, since the animal presented intense dyspnea. The treatment was accomplished with dipyrone (Pironal, Campinas, SP), in 25 mg/kg dosage for four days, ceftiofur (Top Cef, São Paulo, SP) in 2 mg/kg dosage during eight days, and flunixin meglumine (Niglumine, Paulínia, SP) in 0.25 mg/kg dosage for four days, all of these supplied endovenously twice a day. Bromexina (Aliv V, São Paulo, SP) was also applied in 80 mg/kg dosage endovenously for four days, and prebiotic + probiotic supplement (Organew, Louveira, SP) 10 g orally, N-acetyl-cysteine-based syrup (Mucomucil xarope, Louveira, SP) orally in 10 mg/kg dosage, vitamin supplement (Hemolitan JCR, Louveira, SP) 15 ml being applied orally, vitamin complex (Bionew, Louveira, SP) 20 ml endovenously, all of these supplied once a day for eight days. And also, vitamin complex and antitoxic amino-acid (Mercepton, Engenho Novo, RJ) endovenously in the quantity of 10 ml during four days. The solution choice for fluid therapy was Ringer Lactate. Clinical exams were carried out twice a day, and the patient was continuously monitored.

The thorax ultrasound showed thickening of the pleura and significant reduction in the pleural sliding. A circular area was observed with hypoechoic content, regular and well-defined contour of approximately 18mm located in the right lung, between the 8th 9th intercostal spaces (Fig. 1). The findings suggest an inflammatory process and abscess, respectively.

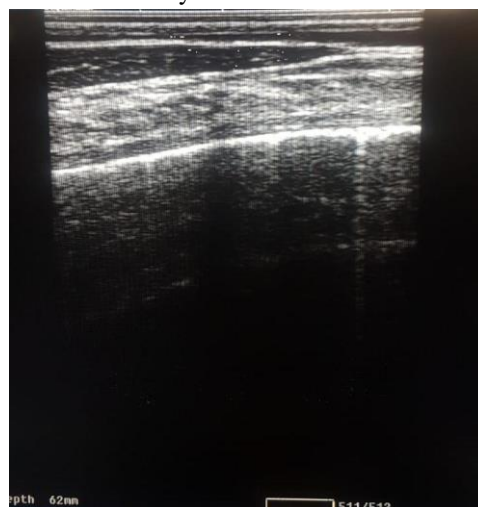
Figure 1 - Thorax ultrasound showing circular hypoechoic area and pleural thickening, before the treatment.



Initial laboratory exams revealed reduced haematocrit and hemoglobin, and increased fibrinogène. Four days after the beginning of the treatment new exams were carried which demonstrated the absence of alterations, corroborating the clinical improvement observed. Lung auscultation showed reduction of wheezes compared to the initial one.

The treatment applied provided quick improvement of the clinical condition. Eight days after admittance a new thorax ultrasound was taken that showed significant improvement of the pleural sliding and fading of the hypoechoic area suggesting lung abscess (Fig. 2).

Figure 2 – Thorax ultrasound with absence of hypoechoic area and reduction of pleural thickening, after eight days of treatment.



Based on the noticeable clinical improvement and on the ultrasound, decision was made to release the animal. The significant alterations found in the initial clinical exam were absent at the end of the treatment.

3 DISCUSSION

In reference to the initial diagnostic approach to equine respiratory disorders, Reed e Bayly (2000) mention the environment as a greatly relevant factor to be analyzed during the anamnesis, since it can contribute to the development of respiratory diseases. In the case in reference, the animal was subjected to an environment with poor hydric drainage, which resulted in high level of humidity and excessive presence of mud, a condition that is enhanced during the rainy period. This way, the environment possibly caused negative influence in the respiratory and immunological conditions of the foal.

Frape (2015) shows that the consumption of energy and nutrients by the mare in the final period of gestation and during nursing has significant importance in the production of milk and in the foal development. The same author also mentions the influence of the mother's overall condition on the foal's immune efficiency. Therefore, the low body performance and the stressful condition of the environment the mare was subjected to were also likely factors predisposing the disease.

Fever, apathy, low body performance, nasal secretion, coughing, dyspnea, tachypnea, superficial breathing, thorax and womb silence, and mild pleural noise are characteristic signals found in the clinical examination of pleuropneumonia (THOMASSIAN, 2005; REED; BAYLY, 2000). The signs found in the case in reference are similar to those mentioned by the authors, which supports the clinical suspicion.

According to Reed e Bayly (2000), laboratory alterations like reduction in the hemogram red series and hyperfibrinogenemia are commonly found in pleuropneumonia cases. Therefore, the laboratory exams corroborated the observations of the authors referred to, thus emphasizing their importance for the evaluation of the animal's overall condition for confirmation of the diagnostic suspicion.

The ultrasound can be considered the imagery technique of choice for pleuropneumonia cases, making it possible to observe areas of liquid accumulation and pleural thickening, lung consolidation and abscess (RADOSTITS, 2010). Grizendi et al. (2014) also reported on the efficiency of ultrasound in the assessment of lung parenchyma. The present case reaffirmed the ultrasound technique as a diagnostic option of great importance, and it may

be used to monitor the patient's evolution. This way, based on the clinical assessment and by means of complementary exams, it was possible to determine the definitive diagnosis.

Viana (2014) defines sodic ceftiofur as a broad spectrum betalactamic antibiotic, whereas Andrade (2008) indicates its use for pneumonic diseases. And Tejero et al. (2009) recommend its use specifically in equine pleuropneumonias. This way, being impossible to immediately determine the causing agent and given the urgency to establish the antibiotic therapy, choice was made to apply sodic ceftiofur, in view of its action on different types of bacterial species. Neri (2010) mentioned intravenous therapy with sodic ceftiofur as an efficient technique, without clinical signs of harmful collateral effects, characteristics also found during the treatment applied in the case reported here.

Now Rhadostits (2010) mentions ceftiofur for the treatment of equine pleuropneumonia, but he does not recommend its use as the single antibiotic agent. However, in this report quick evolution and reestablishment of clinical conditions were observed, the antibiotic therapy being applied only with sodic ceftiofur and no associations.

Dereti (2003), in research, inquired Veterinary Doctors which antibiotics they prescribed for equine respiratory tract infections. Sodic ceftiofur was mentioned by 34.8% of professionals. Thus, its use in respiratory diseases has been observed over ten years, yet it was also seen that a great part of the professionals at the time did not know about the medicine efficiency.

4 CONCLUSION

In view of the points exposed herein, the efficiency of sodic ceftiofur is noticeable in the treatment of pleuropneumonia in foals. Given the low age of the animal, the severity of signs presented, the alterations showed by the initial clinical examination, and also the alterations in the initial complementary exams, the clinical evolution occurred in a fast manner.

Also to be emphasized is the importance of the patient admittance, since it enables systematic and proper accomplishment of the treatment, with rigorous fulfillment of medication timetables and regular follow-up of clinical parameters. These are conditions of great relevance for the treatment success.

Another important factor was the use of ultrasound, not only for the definitive diagnosis of the disease, but also for the follow-up of the treatment evolution.

Therefore, sodic ceftiofur proved efficient as the single pharmaceutical antibiotic in the treatment of foal pleuropneumonia.

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