

Therapeutic Management of Upper Respiratory Tract Infection in a Foal with Ceftriaxone and Lugol's Iodine

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ABSTRACT

A filly of about six month age and weighing approximately 100 kg was presented to VCC, LUVAS, Hisar with history of fever (103.2°F), inappetence, depression, weakness, mucopurulent nasal discharge, enlarged, hot and painful lymph nodes of the throat region and laboured breathing. The animal was treated with inj. ceftriaxone 10 mg/kg b.wt. I/M, inj. ketoprofen 3 mg/kg b.wt. I/M, inj. ascorbic acid 20 mg/kg b.wt I/M and Lugol's Iodine (five per cent) five ml mixed with 500 ml NSS through slow I/V route for six days. Fever and lymph nodes swelling subsided within three days of treatment. The animal recovered completely after six days of treatment and started feeding normally.

Key words: Respiratory; lymph node; Treatment; Ceftriaxone; Lugol's Iodine.

INTRODUCTION

Respiratory tract infections are the major hazard for equines worldwide^{1,2}. Streptococci are very important group of gram positive cocci bacteria and these are commonly involved with respiratory tract infection in equines. Strangles is an infectious and highly contagious respiratory tract bacterial disease of equine which is caused by *Streptococcus equi*³. The most common clinical symptoms in the infected equines are fever, serous nasal discharge which turns mucopurulent or purulent later on. In animals which are effected with strangles, acute swelling with subsequent abscess formation in

submandibular and retropharyngeal lymph nodes is observed⁴. Bacteriological culture of nasal swabs, nasal washes, and aspirated pus from abscesses remains the gold standard for diagnosis⁵.

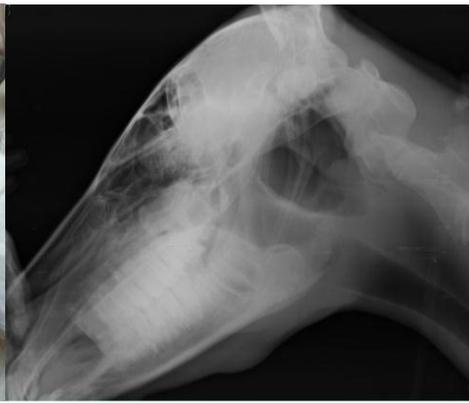
CASE HISTORY AND OBSERVATIONS

A six month old filly was presented to VCC, LUVAS Hisar with history of fever (103.2°F), anorexia, depression, weakness, dyspnoea, mucopurulent nasal discharge, enlarged, hot and painful lymph nodes of the throat region (Fig. 1). This animal was previously treated with inj.

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(Figure 1)



(Figure 2)

Strepto-pencillin 1gm and inj. meloxicam 20 mg/kg I/M for a period of four days by a field veterinarian with some initial response to this treatment but relapse occurred after four days. On clinical examination respiration rate was found to be 27 per minute and pulse rate 64 per minute. Blood sample was taken for haematological examination from jugular vein in ethylenediamine-tetraacetic acid (EDTA) vial. Haematological analysis revealed haemoglobin - 11.6 g %, total leucocyte count (TLC) - 18.63 x 1000 cmm, relative differential leucocyte count revealed (DLC) N - 84, L-15, M-1 and E-0. On microscopic examination of blood smear no haemoprotozoan parasite was observed. Radiographic examination of throat region was also conducted to find any abnormality. Radiographic examination revealed soft tissue swelling of throat region (Fig. 2). Nasal swab sample was collected through sterile disposable swabs for microbiological culture examination and antibiotic sensitivity test. After collection of nasal swab, it was immediately streaked onto the blood agar plate. The plate was incubated at 37°C, and the colony formation on the plate was observed after 24 hours. Cultural examination revealed presence of *Streptococcus* spp. Result of antibiotic sensitivity test revealed that the organism was sensitive to cephalaxin, clindamycin, streptomycin, chloramphenicol, ceftriaxone, gentamycin, neomycin, ciprofloxacin, cefoperazone while resistant to enrofloxacin, penicillin G, amoxiclav, amoxicillin,

oxytetracyclin, erythromycin, ampicillin and cloxacillin.

TREATMENT AND DISCUSSION

Haematological findings revealed significant leucocytosis and neutrophilia. Canfield *et al.*⁶ and Ijaz *et al.*⁷ also suggested that leucocytosis was outcome of neutrophilia in experimentally infected horses with *S. equi*. Leucocytosis and neutrophilia commonly occur in horses in association with septic conditions associated with bacterial infection due to *S. Equi*⁸. This animal was previously treated by field veterinarian with some response initially but relapse occurred after four days. In present case bacteria were resistant to penicillin as per findings of antibiotic sensitivity profiling, therefore, animal was treated with ceftriaxone 10 mg/kg b.wt. I/M, ketoprofen 3 mg/kg b.wt. I/M, ascorbic acid 20 mg/kg b.wt. I/M and Lugol's iodine⁹. Five ml of 5 per cent Lugol's iodine solution was mixed in 500 ml NSS and was administered slowly by I/V route for six days. Clinical findings i.e. fever and lymph nodes swelling subsided after three days and the animal recovered completely after six days of treatment and started feeding normally. In this case Lugol's iodine helped in reducing inflammation, fibrosis and might have synergistic action with the antibiotic for treatment in this case. Iodides have bactericidal, fungicidal and parasiticidal actions in presence of peroxidases. The iodine peroxidase system have been reported to be active against different kind of bacteria including *Staphylococcus aureus*, *E. coli*,

Micrococcus, *Listeria monocytogenes*, *Candida albicans*, *Schistosoma mansoni*, *Fusarium nucleatum* and *Actinobacillus actinomycetemcomitans*¹⁰. Equines in age group under one year are the most susceptible to the development of strangles, followed by the age group 1 - 2 and 2 - 4 years respectively. Similar reports are also published by Ijaz et al.¹¹ who reported that horses less than 2 years of age are the most susceptible than adults. The successful outcome of the therapeutic regimen reported here through inclusion of Lugol's iodine along with the antibiotic administration in the resistant infection of upper respiratory tract may be helpful to many field practitioners also.

REFERENCES

1. Khoo, L. L., Maswati, M. A., Roseliza, R., Rosnah, Y., SaifuNazri, R. and Ramlan, M., Isolation of *Streptococcus equi* during strangles surveillance in Peninsular Malaysia. *Malays. J. Vet. Res.* **2(2)**: 27-32 (2011).
2. May, J. P., Walker, C. A., Maskell, D. J. and Slater, J. D., Development of an *in vivo* Himar1 transposon mutagenesis system for use in *Streptococcus equi* subsp. equi. *FEMS Microbiol. Lett.* **238(2)**: 401-409 (2004).
3. Paillot, R., Robinson, C., Steward, K., Wright, N., Jourdan, T., Butcher, N., Heather, Z. and Waller, A. S., Contribution of each of four superantigens to *Streptococcus equi* induced mitogenicity, gamma interferon synthesis, and immunity. *Infect. Immunol.* **78(4)**: 1728-1739 (2010).
4. Sweeney, C. R., Timoney, J. F., Newton, J. R. and Hines, M. T., *Streptococcus equi* infections in horses: Guidelines for treatment, control, and prevention of strangles. *J. Vet. Intern. Med.* **19(1)**: 123-134 (2005).
5. Mallicote, M., Update on *Streptococcus equi* subsp *equi* infections. *Vet. Clin. North Am. Equine Pract.* **31(1)**: 27-41 (2015).
6. Canfield, P. J., Love, D. N., Rainger, J. and Bailey, G. D., Strangles in horses. A report for the rural industries research and development corporation. In: Rural Industries Research and Development Corporation (RIRDC) Publication No. 0017 Project No. US 24/A, Canberra. (2000).
7. Ijaz, M., Khan, M. S., Khan, M. A., Avais, M., Ali, M. M. and Saleem, M. H., Molecular identification and haematological values of strangles (*Streptococcus equi*) affected mules in Pakistan. *Pak. J. Zool.* **43(3)**: 587-592 (2011).
8. Ricketts, S., The Beaufort Cottage Laboratories Guide to Equine Clinical Pathology. Rossdale and Partners Veterinary Surgeon, Suffolk. (2006).
9. Srinivasan, V., Pharmacology Material Medica and Therapeutics for Veterinary Students. Scientific Book Co. Patna. p 258 (1990).
10. Bafort, F., Parisi, O., Perraudin, J. P. and Jijakli, M. H., Mode of action of lactoperoxidase as related to its antimicrobial activity: A review. *Enzyme Research.* pp: 260-273 (2014).
11. Ijaz, M., Khan, M. S., Khan, M. A., Avais, M., Maqbool, A., Ali, M. M. and Shahzad, W., Prevalence and serum protein values of strangles (*Streptococcus equi*) affected mules at Remount Depot, Sargodha Pakistan. *Equine Vet. Educ.* **4**: 196-198 (2010).