

Clinical laboratory investigation of Moldy straw poisoning in cattle in Kathmandu Valley

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Abstract

Unidentified disease was characterized by hypersensitivity, incoordination, a peculiar stiff-legged gait of the hind legs, severe generalized tumors of the skeletal muscles, progressive paresis, paralysis and constipation and death was reported in a cattle herd of 82 in Kathmandu valley in 2009 which was maintained in moldy rice straw feeding. The most notable gross pathological lesions in one bull and two cows which died were degenerative and necrotic changes in certain skeletal muscles, hemorrhages on the serosal surfaces, especially on the dorsal aspect of the rumen, and gastro-intestinal stasis. Samples of rice straw, feed and tissue samples of rumen, reticulum, liver revealed the growth of fungus species penicillium and when rest of animals in herds were treated with Anti Deg Nala liquor the general health of rest of animal steel feeding the rice straw and same sources of feed improved and mortality checked.

Key words: Cattle, Moldy Straw, incoordination, stiff-legged gait of the hind legs, tumors of the skeletal muscles, Penicillium, Anti degnala liquor,

Introduction

An outbreak of disease affecting a herd of 83 dairy cattle in Kathmandu Valley in 2009 which were fed moldy, rice straw is described. Out of the affected cattle 3 of which died. The clinical signs included muscular tremors, hypersensitivity, ataxia, anorexia and salivation and death.

Material and Methods

Clinical and post-mortem examination of Herds:

The clinical signs were characterized by flaccid paralysis and gait abnormalities. Clinical signs were more pronounced after exercise and included stiff and unsteady gait, knuckling at the fetlocks of the hind limbs, frequent falling, inability to rise, muscular tremors, especially of the head and the hindquarters, and drooling. Main necropsy findings included degenerative and necrotic changes of the larger medial muscle groups of the hindquarters. Necrosis of the forestomach mucosa was the most characteristic gross pathological change. Focal erosions to severe, diffuse, coagulative necrosis of the mucosa in the rumen, reticulum and omasum and congestion and haemorrhages in the abomasums was similar to as reported by Schneider DJ, Marasas WF, Collett MG, van der Westhuizen GC, Paulino, Loretti Alexandre; Moleta Colodel Edson; Driemeier David; Mendes Correa André; Bangel Jorge José; Ferreiro Laerte; Loretti AP, Colodel EM, Driemeier D, Corrêa AM, Bangel JJ Jr, Ferreiro L.

Samples of rice straws of different lots and feed and post-mortem tissue samples in mycobioal culture media revealed the growth of penicillium spp, which was similar to the finding of Karki et.al.2008 C.Wendell Horne2008, www.springerlink.com/index/q7g038v8x3m10026.pdf 2008 Sabreen, M. S. and Zaky, Z. M.* 2001.

Hematological findings of samples from clinical case pre-treatment:

Animal	RBC	WBC	PCV%	HB
OX	4*10 m	7.2*10 mm	323	7.6
C.calf	4.6*10 m	8.2*10 mm	328	9.3
C.calf	4*10 m	7.8*10 mm	324	8
C.calf	4.5*10 m	8.2*10 mm	327	9
Normal	5*10m	4-12*10mm	328-42	8.5-3.5

Preventive treatment with Anti Degnala liquor: All cattles that were showing clinical symptoms were treated with Antidegnala liquor 5 ml s/c followed by 2 ml daily for next 10 days. Similarly rest of animals in herds were also provided with same drugs at the dose rate of 2 ml orally for ten days. Those cattles received the treatment as earliest time recovered promptly the delayed treated cattle too recovered but took bit longer time the treatment response was similar to earlier findings of Karki et.al 2008.

Result and Discussion

As during warm humid climate of tropics and subtropics favors growth of mold and fungus in feed

grains and fodder especially after heavy monsoon rain feeding of exclusively such grain to livestock and poultry seems to cause the detrimental effect in the health these animals. As in this investigation clinical signs of anorexia, apathy, diarrhea and ruminal stasis and Clinical pathological findings included mild focal erosions to severe, diffuse, coagulative necrosis of the mucosa in the rumen, reticulum and omasum and congestion and hemorrhages in the abomasum. Liver with shrunken appearance pale to yellowish discoloration with bile filled distended bladder pin point hemorrhage in kidney, small intestine with excessive mucus. On mycological and microbiological examination of tissue samples from post-mortem of dead cattles and straw and feed samples on respective medium revealed the growth of fungal pathogens like *Penicillium* spp with *E.coli*. These results provide circumstantial evidence that feeding of moldy rice straw maize grain and green fodder leaves infected by *Penicillium* and *Aspergillus* spp and timely use of Antidegnala liquor has controlled the further mortality in sick cattles and when remaining animals in herd there was no further appearance of syndrome indicative of the above polyneuropathic syndrome was caused by a systemic Mycosis in these cattles. Same way in this observation it was observed the entire animal which was treated with injection of anti Degnala liquor recovered completely. Same way there was marked increase in total WBC count, and decrease in RBC count as well PCV and Hb during clinical phase of syndrome on treatment there was marked increase of both PCV and Hb and increase in RBC count and normal WBC count also support that this syndrome was attributed by infestation of fungus on rice straw which was fed to these animals. need to be looked into.

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References

1. Botha, C J : Kellerman, T S : Fourie, N (1996): A tremorgenic mycotoxicosis in cattle caused by *Paspalum distichum* (L.) infected by *Claviceps paspali*. *J-S-Afr-Vet-Assoc.* 67(1): 36-37.
2. Gilmour JS, Inglis DM, Robb J, Maclean M. (1989): A fodder mycotoxicosis of ruminants caused by contamination of a distillery by-product with *Aspergillus clavatus*. *Vet Rec.* 11;124(6):133-5.
3. Schneider DJ, et.al. (1985): An experimental mycotoxicosis in sheep and goats caused by *Drechslera campanulata*, a fungal pathogen of green oats. *Onderstepoort J Vet Res.* 52(2):93-100.
4. Kalra DS, Bhatia KC. (1990): Degnala disease in buffaloes and cattle: epidemiological investigations. 1: *J Environ Pathol Toxicol Oncol.* 10(3):132-5.
5. Ellis, Kimberly. Hemorrhagic bowel syndrome in dairy cows, Senior Seminar Paper SF610.1 2008 E45, <http://hdl.handle.net/1813/12788>.
6. Paulino Loretto, Alexandre ,et.al. (2003): Neurological disorder in dairy cattle associated with consumption of beer residues contaminated with *Aspergillus clavatus*. *Jour. of vet. diagnostic investigation* 15,(2): 123-132.
7. Kimberly S. Brown (2001): Forage Testing Points to Molds and Mycotoxins May 18, Article # 3526; TheHorse.com.
8. Azhar Maqbool, et.al. (1998): Prevalence, etiology, chemotherapy and control of Deg Nala disease in buffaloes and cattle in Pakistan; *Veterinarski Arhiv* 68 (6): 213-217, 1998
9. Kellerman TS, et.al. (1984): Tremorgenic mycotoxicosis of cattle caused by maize sprouts infested with *Aspergillus clavatus*. *Onderstepoort J Vet Res.* 51(4):271-274.
10. Kedar Karki and Purnima Manandhar (2008): Clinical-Epidemiological Investigation of Mouldy Corn Poisoning due to *Penicillium* spp. in mules at Udayapur District, Nepal: *Veterinary World* 1(4): 107-110.
11. Loretto AP, et.al. (2003): Neurological disorder in dairy cattle associated with consumption of beer residues contaminated with *Aspergillus clavatus*. *J Vet Diagn Invest.* 15(2):123-32.
12. Meat and meat products: Other animals carrying *E. coli* O157 include sheep, goats, wild deer, pigs,... by *Penicillium*, *Rhizopus*, and *Aspergillus* spp. (ICMSF, 1980b). www.springerlink.com/index/q7g038v8x3m10026.pdf:-Retrieved on 13 october 2008.

Table-2. Hematological findings of samples from clinical case post treatment

Species of animal	RBC	WBC	PCV%	HB
Ox	7.2*10 millionmmc	4.6*10mm	328	9.3
Ox	8.5*10 millionmmc	5*10mm	330	10
Calf	9*10 millionmmc	5.5*10mm	333	11
Calf	8.6*10 millionmmc	5*10mm	330	10
Ox	7.9*10 millionmmc	4.8*10mm	329	9.6
B.bull	9.5*10 millionmmc	6*10mm	336	12
Normal	5*10millionmmc	4-12*10mm3	28-42	8.5-13.5