

SHORT COMMUNICATION

'OROGI' POISONING IN CATTLE IN HANANG DISTRICT, ARUSHA TANZANIA: CASE REPORT

¹Shirima, G.M¹., Khama, I²., Minja, G. W²., Ngomuo, A J³., Kazwala, R. R³ and Ernest, E.M.³

¹Livestock Training Institute, P. O. BOX 51 Mpwapwa, Tanzania.

²Agriculture and Livestock offices, Hanang district ³Sokoine University of Agriculture, P.O.BOX 3015, Morogoro. Tanzania

SUMMARY

A survey was carried out to investigate and establish the incidence of 'orogi' poisoning, clinical manifestations and identifying the plant species incriminated. The incidence of 'orogi' poisoning from six villages surveyed was 48%, with animals presenting with laminitic signs which included, elongated and inflamed hooves, stiff gait, and separation of the horny and sensitive laminae occurs of the hooves in advanced cases. *Crotalaria barkae* was found to occur widely in the six villages and was probably the cause of the disease. The plants' good palatability influenced milk production in lactating cows in early days of feeding, but continued feeding lead to intoxication. Removal of animals from the contaminated pastures, and symptomatic treatment with hydrocortisone acetate and furosemide resulted in variable recovery. Based on differential diagnosis, other conditions seemed to be not significant for the current syndrome.

INTRODUCTION

Plant poisoning is suspected to occur in Tanzania, but there is lack of published information on its impact in the livestock industry in the country. For example *Dichapetalum stuhlmannii* and *D. ruhlandii* infest large pieces of land in the Coastal (Coastal region) and Southern (Lindi and Mtwara regions) zones of the country, rendering such areas unsuitable

for ruminant production (Msami, 1999; Ngomuo *et al.*, 1995). Incidences of cyanide poisoning through consumption of *Manihot glaziovii x esculenta* (Kisamvu) in dairy cattle have been reported in several villages. For example, in Magadu village, (Morogoro region), in 1999 three cattle died after ingesting kisamvu leaves, and in Kibaha dairy units, five calves died in 1998 after ingesting fresh cassava peels. In pangani village located in Tanga,

three goats died after eating cassava peels (Ngomuo, A. J. Unpublished findings). The genus *Crotalaria* contains many species that are poisonous to livestock. The genus is comprised of more than 500 species, which are widespread in the tropics and subtropics. *Crotalaria spp.* are reported to occur widely in Tanzania (Turill and Milne-Redhead, 1952).

Orogi is a barbaig name, which refers to *crotalaria* plants. There have been several complaints from smallholder dairy farmers and pastoralists in Hanang District on disease syndromes that appeared to be due to plant poisoning.

The purpose of this investigation was to establish the incidence of 'orogi' poisoning, clinical features and to identify the poisonous plant to the specie level.

METHODOLOGY

Table.1. Proportion of animals affected with lameness in six villages of Hanang District between June and July 2001

Village	Herds	Total animals	Affected animals(%)
Mureru	2	60	18 (30)
B/Lalu	2	79	27 (34)
Jorodom	2	09	06 (67)
Katesh	2	13	09 (69)
Dumbeta	2	56	42 (75)
Gawidu	2	26	14 (54)
Total	12	243	116 (48)

(b) Clinical features

Common clinical features observed were elongated and inflamed hooves, walking stiffly on their heels with arched backs and in advanced case separation of horn and sensitive laminae occurred. In severe condition, animals become recumbent with loss of body condition, variable inappetance and hooves overgrowth (Fig. 1).

Six villages in Hanang district were surveyed in this study. Three of the villages namely, Jorodom, Dumbeta and Gawidu had reported that a majority of their animals had problems associated with their feet, whereas, the remaining three villages were just conveniently sampled. In each village two herds were visited and a clinical examination conducted on each animal. Grazing areas were also visited and surveyed for the presence of 'orogi' plants. Whole plant specimens were delivered to Sokoine University of Agriculture for identification.

RESULTS

(a) Incidence of the syndrome

Twelve herds with a total of 243 cattle were visited and the animals examined; the results are as presented in Table 1



Figure 1. Cattle showing excessive hooves overgrowth due to *Crotalaria barkae* poisoning

Following differential diagnosis, most common conditions such as foot and mouth disease, foot rot and laminitis due to grain overload were also considered in causing laminitis in cattle.

(c) *Plant identification*

A survey of pastures grazed by cattle in the different villages showed a widespread presence of *Crotalaria* spp., which was

subsequently identified as *Crotalaria barkae*. The plant is well branched, with lower branches being long and prostrate, leading shoot up to a height of up to 1m. Stems are covered with short hairs and leaves are trifoliolate. Flowers are bright yellow to reddish purple and Pods are round to about 1 cm long (Figure 2).



Figure 2. Morphological appearance of young *Crotalaria barkae* plant

DISCUSSION

(a) Magnitude of the problem

The clinical signs presented in the present study were found to be very similar to the laminitic form of crotalaria poisoning in cattle. Poisoning with *C. polysperma*, *C. lachnocarpoides* and *C. zimmermannii* is reported to manifest as an acute or chronic illness. The most characteristic sign of acute poisoning includes hooves overgrowth deformation of the hooves associated with stiffness and staggering gait, as observed in the present study. The syndrome has been referred to as laminitic crotalism (Clarke *et al.*, 1981; Kellerman *et al.*, 1988). The high prevalence of *crotalaria* plants in all the villages surveyed, clinical signs coupled with the fact that the animals

recovered soon after removal from infested grazing land indicates that *Crotalaria barkae* could be the cause of the syndrome.

Although Jorodom and Katesh villages had a high proportion of animals being affected, the distribution of *Crotalaria barkae* was very sparse. The high incidence noted may be attributed to the management system because cattle owners practised cut-and-carry system and were not selecting against *crotalaria* plants. The poisonous plants were mixed with other forage and fed to animals. Reports from farmers showed that the legume is very palatable and that in the early stages of feeding milk production increases, but as feeding continues milk production

decreases followed closely with development of laminitis. Furthermore, these plants observed to have seasonal variation. These plants are plenty after heavy rains and it's this time of the year incidences of poisoning are high in cattle. Goats and sheep seemed to be not affected as cattle although they graze together. This probably could be due to high ability of goats and sheep to detoxify the toxins in the rumen as it is for pyrrolizidine alkaloids causing liver cirrhosis (Radostits, *et al.*, 2000). This pyrrolizidine alkaloid monocrotaline, on absorption from the gastrointestinal tract, is rapidly activated in the liver to the toxic metabolite monocrotaline pyrrole that damages genetic material leading to cell defects or death. Although monocrotaline and its metabolites are rapidly excreted, their effects are cumulative even at low rates of intakes. Two basic principles were used to alleviate the situation (Khama, I. Unpublished findings). Animals were prevented further access to the *C. barkae* contaminated communal pastures, and the sick ones were provided supportive/symptomatic treatment. Although there is no antidote for *crotalaria* poisoning, in the present study symptomatic treatment has to be resorted to and involved administration of hydrocortisone acetate by the intramuscular route or furosemide for three days.

Although there was no report on mortalities in the area, high morbidity observed could impair livestock production. Therefore, a need to establish type of toxins, toxicity levels and other incriminated *crotalaria spp* will be highly valuable and appreciated.

ACKNOWLEDGEMENT

Authors wish to express many thanks to herd owners to allow us visiting their herds and conduct an investigation. Also we appreciate the assistance received from BTB project in facilitating data collection during its field visits. We extend our gratitude to the project driver Mr. Paulo Charles for his tireless driving to those villages despite having other duties.

REFERENCE

- Clarke, M. L., Harvey, D.G. and Humphrey, D.J. (1981). *Veterinary Toxicology*. London: Baillier Tindall.
- Kellerman, T.S., Coetzer, J.A.W. and Naude', T.W. (1988). *Plant poisoning and mycotoxins in Livestock in Southern Africa*. Cape Town. Oxford University Press.
- Msami, H.M., (1999). An outbreak of suspected poisoning of cattle by *Dichapetalum* sp. In Tanzania. *Tropical Animal Health and Production*. 31: 1-7.

- Ngomuo, A.J., Kambarage, D.M., Mwamengele, G.L.M. and Matovelo, J.A. (1995). Dichapetalum species toxicity in cattle in a farm in Tanzania. *Veterinary and Human Toxicology*. 37: 143-144.
- Radostits, O. M., Gay, C. C., Blood, D. C., Hinchcliff, K. W. (2000). *Veterinary Medicine: A textbook of the Diseases of Cattle, Sheep, Pigs, Goats and Horses*. 9th Ed. Harcourt Publishers Ltd. London. Pp. 1877.
- Turill, W.B. and Milne-Redhead, E. (1952). Leguminosae. In: *Flora of Tropical East Africa*, London. Crown Agents.