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Clinico-pathological study of *Lantana camara* toxicity in a sheep farm

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Abstract

Lantana camara is an exotic weed brought to India as an ornamental plant but become toxic weed in most parts of the country. This plant is not readily eaten by cattle but when ingested leads to hepatotoxicity and photosensitization. *Lantana camara* poisoning in sheeps has been described in this paper. Animals were part of a farm located in Ayodhya district. This study focusses on clinical signs and postmortem examination with emphasis on pathological changes in liver, kidney, gall bladder on the account of *Lantana camara* poisoning.

Keywords: *Lantana camara*, sheep, hepatotoxicity, photosensitization, lantadenes

Introduction

Plant poisoning occurs sporadically but are of major concern to livestock sector as they cause heavy mortality as well as reduction in productivity (Day *et al.*, 2003) [2]. *Lantana camara* is a noxious weed that grows in many tropical and subtropical parts of the world (Sharma *et al.*, 2007) [13]. It is also known as bunch berry, red sage or wild sage (Sharma *et al.*, 2007) [13]. This plant is known as a notorious weed as well as popular ornamental plant. This plant is one of the poisonous plants and is very frequently found in India. Both ruminants and non-ruminants are susceptible to toxicity. The red flower variety (*L. camara var. aculeate*) of this weed is mainly toxic and usually prevalent in tropical and subtropical countries (Kumar *et al.*, 2016) [9]. In summer season, animals like cattle, sheep, horse and goat eat the leaves, fruits, flowers (pink, white or yellow colored) and shoots of plant and die in a week to fortnight. Toxic dose depend upon the mode of induce the toxicity either through the exposure to leaves naturally or experimentally. Cattle are most commonly affected, but sheep and goat are equally susceptible. Roots of this plant are rich in oleonic acid, a hepatoprotective triterpenoid. *Lantana* poisoning results from the ingestion of toxic varieties of the plant which contain toxin known as pentacyclic triterpine acids Lantadene A, B, C, and D. Lantadene A is the most significant toxic agent in this plant which is also known as Rehmannic acid. This toxin results in intrahepatic cholestasis and consequences of liver injury include jaundice, photosensitization and ruminal stasis (Pass, 1986) [12]. Lantadene toxin resemble cholesterol and absorption of cholesterol is known to be facilitated by esterification with cholesterol esterases. This toxin could not be detected in liver, bile, gallbladder, blood and urine samples but can be detected in lower GIT and faeces. Generalized weakness, anorexia, constipation followed by diarrhea, corneal opacity, photosensitization associated dermatitis with alopecia, fissures and sloughing of skin at various parts of body viz. brisket, perianal region, face, nasal area with serum and bloody discharges are common signs (Srikant *et al.*, 2013) [14]. Carcass in *lantana* poisoning is characterized by severe icterus, dehydration, constipation, hepatosis, distention of the gall bladder and nephrosis (Munya *et al.*, 1990 and Sharma *et al.*, 2007) [10, 13].

Material and methods

A farmer of block and village khandasa, Kumarganj in September, 2018 reported 5 mortalities in a flock of 30 sheep to the Teaching Veterinary Clinical Complex, NDUAT, Kumarganj, Ayodhya, and brought one dead sheep for post-mortem examination. The owner reported that animals were sent for free grazing and might have consume some poisonous plant. The farm was visited and on the basis of grazing area, grazing history and clinical signs, toxicity of *lantana camara* was suspected. Total eight sheep were suspected with typical *lantana* poisoning on the basis of clinical signs and symptoms like reduced feed intake, decreased ruminal motility, tendency of itching and avoidance to sunlight, yellowish mucous membrane, constipation and spot on skin. The post-mortem examination of dead sheep were conducted thoroughly and carefully for any gross lesions in liver, kidney, gall bladder etc. Different organs viz. liver, kidney, gall bladder were collected in 10% neutral buffered formalin for

further histo-pathological studies. Other deaths were ruled out on the basis of history, clinical signs and post mortem findings.

Results

During farm visit, numerous lantana shrubs were found near farm campus (Fig. 1). The incidence and mortality rate was 43.33% and 16.66% respectively. The affected sheep showed dull and depressed appearance, discharge from the eyes (conjunctivitis), reduced feed intake, dehydration and ruminal stasis. Oedema of oral mucosa, lips and ear were also observed. There was loss of hairs and sloughing of skin around ear, muzzle, eye and tail which is suggestive of photosensitization (Fig. 2) Affected sheep were showing discomfort and abnormal behaviour when exposed to sun light.

The postmortem examination showed yellow discoloration of tissues. The liver was enlarged, fragile and pale yellow (Fig. 3 & 4). Gall bladder was swollen with dark and viscous contents (Fig. 5). Kidney was pale and swollen (Fig. 6). Moderate and diffuse pulmonary congestion was also observed. The colon and rectum were impacted with faeces which is suggestive of constipation.



Fig 1: Plant of lantana camara near the sheep farm.



Fig 2: Sheep brought for postmortem along with photosensitive reaction at abdomen area.



Fig 3: Discoloured and friable liver of affected sheep.



Fig 4: Discoloured and enlarged liver along with swollen gall bladder.

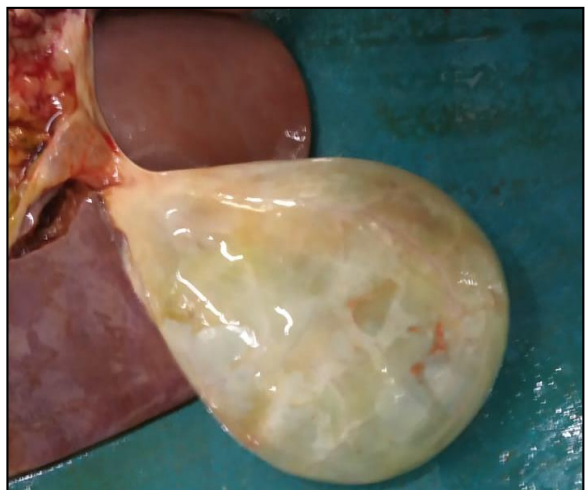


Fig 5: Swollen gall bladder of affected sheep.



Fig 6: Swollen and pale kidney of affected sheep

Treatment

Lantana poisoning was diagnosed on the basis of history, clinical signs and post-mortem findings. The affected sheep were treated with Kol L (activated charcoal) at dose rate of 3 gm/kg body wt. PO, DNS 250 ml IV (total dose), I/M inj. Phenramine malliate @ 2 ml/ sheep, inj. Meloxicam paracetamol @ 1 ml/sheep, inj. Enrofloxacin @ 2ml/sheep and inj. Vitamin B complex @ 2 ml/sheep for 7 days. After 5th day of treatment sheep started taking feed and become normal in 15 -18 days.

Discussion

The clinical signs and post-mortem findings in this study are in agreement with earlier findings of Fourie *et al.* (1987) [4], Kellerman *et al.* (1985) [5], Kelly *et al.* (1993) [6], Sharma *et al.* (2007) [13], Kumar *et al.* (2009) [8] and Kachhawah *et al.* (2014) [7]. All the affected sheep responded gradually to the line of treatment given and recovered within 15- 18 days. Oral administration of activated charcoal has been earlier described for *Lantana* poisoning treatment by Ekambaram *et al.* (2014) [3]. The successful management of *Lantana* poisoning has also been achieved with the help of combined treatment comprised of liver tonic, anti-histaminic, rumenotonic and fluid therapy by Kumar *et al.* (2009) [8]. The red flower variety (*L. camara* var. *aculeate*) of this weed is mainly toxic and usually prevalent in tropical and subtropical countries (Kumar *et al.* 2016) [9]. Lantadene A causes bile canalicular damage, intrahepatic cholestasis and jaundice in cattle, sheep and goat (Chirayath *et al.* 2017) [11].

Conclusion

Lantana camara has become a wild pest in many parts of eastern Uttar Pradesh of India. Incidence of lantana poisoning varies from sporadic cases throughout the year to heavy outbreaks during drought or flood condition when fodder is in scarce. The lantadenes are major toxic compound found in this plant and are responsible for causing toxicity in almost all the animals thus responsible for mortality and production. Activated charcoal is an effective, quick and economic poisoning antidote. Prevention of poisoning can be done by keeping the farm lantana free and by ensuring that stock have adequate feed and fodder. Preventing the spread of lantana is the most effective management tool.

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