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***Mimosa invisa* poisoning in a Crossbred cow: A case report from Kerala**

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Abstract

The anti-nutritional factor, mimosine which is mainly nephrotoxic and hepatotoxic present in the toxic plant *Mimosa invisa* causes severe toxic effects in cattle. In the present case study, a 5-year-old cow with the history of perineal oedema, diarrhoea, anorexia, incoordination and restlessness was attended to farmer's door step at Ashtamichira, Thrissur, Kerala. History, phytomorphology of the toxic plant and clinical examination revealed the condition as *Mimosa invisa* poisoning. Therapeutically managed the mimosa poisoning with anti inflammatory drugs, loop diuretic, osmotic diuretic and liver protectant and the cow recovered completely.

Keywords: *Mimosa invisa*, mimosine, nephrotoxic, hepatotoxic, perineal oedema

1. Introduction

Mimosa invisa is a fast-growing biennial or perennial shrub which is widely distributed in the central and southern parts of Kerala, India [1]. The seed of the *Mimosa invisa* have a long period of viability, which requires full sunlight and water availability for the growth and mainly disseminated by water. Ingestion of the toxic shrub results severe toxicity in heifers [2], and dairy cows [3]. Generally, there is luxurious growth of the plant during the rainy season in Kerala. An experimental study conducted on calves ingested with *Mimosa invisa* revealed the nature of toxicity and biological effect of the toxin, mimosine on the animal tissues [4]. According to the study, the toxic plant caused anaemia, vascular endothelial damage, nephrosis and toxic effect on the heart and liver of calves. They also reported the toxic symptoms related to the quantity of the plant consumed by the calves. Pooled selected fractions of *Mimosa invisa* administered to rabbits resulted nephrotoxic and hepatotoxic effects [5]. Mimosine, the toxic anti-nutritional factor present in the plant is chemically (β N-3 hydroxy 4-pyridine)- α amino propionic acid [6]. After ingestion of the plant, rumen bacteria convert the mimosine into a goitrogenic agent 3,4-dihydropyridine (DHP) which is toxic to dairy cows [7]. In the present case study, therapeutic management of *Mimosa invisa* accidentally ingested Crossbred cow depicted.

2. History and Clinical examination

A 5-year-old Crossbred cow in her 2nd lactation attended to farmer's door step at Ashtamichira, Thrissur with a history of diarrhoea, anorexia, incoordination, profuse salivation, and swelling at the rectal and vaginal area. Owner reported the cow was left for grazing and it accidentally ingested the toxic plant. Phytomorphologically the plant was identified as *Mimosa invisa*. According to the owner, the animal not urinated since last 6 hrs. On clinical examination, the animal was restless, increased respiration rate and heart rate. The characteristic symptom of mimosa poisoning, the perineal oedema (Fig.1) was observed. Temperature was within the normal range. As per the history and clinical examination, the condition is diagnosed as toxicity due to the ingestion of *Mimosa invisa* and treated accordingly.

3. Treatment and Discussion

The animal was treated with Inj. Chlorpheniramine maleate at a dose rate of 50mg intramuscularly and Inj. Dexamethasone at a dose rate of 1mg/Kg body weight intravenously to relieve the anaphylaxis and as an anti-inflammatory drug.

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Also administered Inj. Furosemide at a dose rate of 1 mg/Kg Body weight intravenously for 2 days as a loop diuretic and to increase the renal blood flow and Inj. Mannitol (20%) as osmotic diuretic at a dose rate of 2 g/Kg Body weight intravenously as a single dose to relieve the oedema and as a renal protectant. As a liver stimulant administered Inj. Belamyl 10 ml intramuscularly on alternate days for 3 days and advised to give Tefroli 10 ml per orally for 1 month. The animal was completely recovered with reduced oedema, normal respiration and normal appetite.

Mimosa invisa is a toxic plant (Fig. 2) and its ingestion may results in toxicity in cattle. Some published reports are available from Kerala, Karnataka, Tamil Nadu and Assam regarding the *Mimosa invisa* toxicity in cattle, buffalo and goat [2, 4, 8, 9, 3]. In most of the cases reported, the farmers were not aware of the toxicity of the plant or grazing on areas in which this toxic plant is more results in the poisoning of cattle. As per the reports, major clinical signs associated with *Mimosa invisa* is anorexia, perineal oedema, anxiety, lethargy, increased heart rate and respiratory rate, low rumen motility, excessive salivation and restlessness [2, 3, 4, 8]. Most of the clinical signs we could observe in the present study with diarrhoea which was not observed in other case studies. With treatment, this may help the cow to eliminate the toxic substances from the rumen and to improve the condition. In some reports the level of creatinine and BUN was elevated in mimosa poisoning and the level of haemoglobin was low on haemato-biochemical examination [9]. The present case was attended during the night hours as an emergency hence blood samples were unable to collect before the treatment. Some studies suggested that ensiling of *Mimosa invisa* with 50% pasture reduced the toxic effects [10]. Toxic effect is mainly induced by the toxic factor present in the plant, mimosine which is mainly affecting the kidney and liver [5]. In the present study steroidal anti-inflammatory drugs administered to reduce the nephritis and also a loop diuretic and osmotic diuretic administered to increase the urine output and to relieve the oedema and also administered liver stimulant. The animal was recovered from the toxic plant poisoning.

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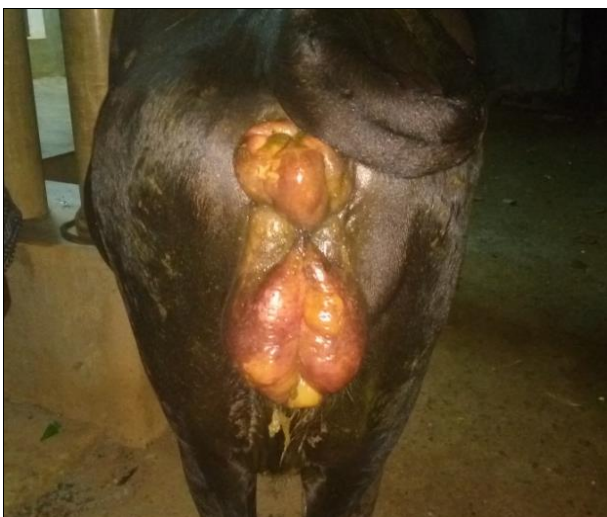


Fig 1: Perineal oedema in a crossbred cow affected with *Mimosa invisa* toxicity.



Fig 2: *Mimosa invisa*

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