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Acute Oxyclozanide-Levamisole Poisoning in Red Kandhari Bullocks

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Case Report

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ABSTRACT

Three adult bullocks of Red Kandhari breed were drenched with oral anthelmentic suspension (Zanide-L DS) containing combination of both 6% oxyclozanide and 3 % levamisole during morning hours. Accidental overdosing (4-6 times the normal dose) was done by animal attendant. After administration of drug, acute onset of toxicity was observed in two bullocks with signs of colic, diarrhea, anal straining, high body temperature, salivation, and hyperesthesia. One bullock died immediately within one hour from onset of clinical signs while other died during initiation of treatment. One bullock with moderate signs responded to therapy with complete clinical cure on the 5th day of treatment. As there is no specific antidote for oxyclozanide or levamisole toxicity, clinical cases could be managed with supportive treatment and intensive monitoring of patient.

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Introduction

Drugs are routinely required in veterinary medicine to treat one or more ailments in farm animals. Accidental administration or ingestion of excess quantity of drug is a common cause of poisoning in farm animals. Incidences of drug poisoning are rarely reported in farm animals (Muntener *et al*., 2010). The drugs responsible for incidences of poisoning in animals are antibiotics, antiparasitics and non-steroidal anti-inflammatory drugs (Xavier *et al*., 2002, Muntener *et al*., 2010). Anthelmentics are used for routine deworming of farm animals. The cases of poisoning/ toxicity of anthelmentics in animals are very rare. Toxicity of oxyclozanide and levamisole as single dewormer in animals are reported but there is no report of toxicity of anthelmentic combination in large animals. The present communication puts on record acute oxyclozanide-levamisole poisoning in Red Kandhari bullock.

Case history and Clinical signs

Two bullocks of Red Kandhari breed were presented to Teaching Veterinary Clinical Complex with history of administration of oxyclozanide (6%) - levamisole (3%) suspension at dose rate of 300 ml to two bullocks and 200 ml orally to one bullock. History revealed death of one bullock within one hour from onset of signs of toxicity.

Clinical examination of two admitted bullocks revealed congested mucus membrane, salivation, hyperesthesia, high rectal temperature (102.4 °F and 106 °F), rapid respiration (38 /min and 56/min) and tachycardia (64/min and 90/ min), severe anal straining, cutaneous vasodilatation and warm skin. Haematology of bullock drenched with 200 ml of anthelmentic suspension revealed severe leukocytosis (19.20 x 10^9/L), lymphocytosis (9.80 x 10^9/L), neutrophilia (8.70 x 10^9/L) and thrombocytopenia (28 x10^9/L) and normal TEC, Hb and PCV.

Treatment

Based on circumstantial evidence, clinical signs and hematology all animals were treated with fluids (RL 4 liters each IV),

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Atropine sulfate 0.2 mg/kg B.W. IV, Vitamin B complex (Methylcobalamine, pyridoxine and nicotinamide) 10 ml IV, Chlorphenaramine maleate- 0.4 mg/kg BW IM, Dexamethasone -0.2 mg/kg IV and Enrofloxacin- 5 mg/kg IM. One bullock with high body temperature (106 °F) and severe dyspena (64/min) died during treatment due to asphyxia. Surviving bullock was treated on same line for 5 days with continuous monitory of vital parameters.

Clinical signs of colic, anal straining and hyperesthesia were completely subsided on the 1st day while feed and water intake was resumed on the 2nd day with passage of loose watery foul smelling feces. Fecal consistency was improved after treatment for 4 days. Post treatment analysis of blood from surviving bullock revealed reduction in leukocyte count (10.66 x 10^9/L), lymphocyte (7.20 x 10^9/L) and granulocyte (3.25 x 109/L) count towards normal range and normalization of platelet count (265 x 10^9/L).

Discussion

Oxyclozanide- Levamisole combination is routinely used in strategic deworming as broad spectrum anthelmentic. Being used at prescribed doses, toxicity of these anthelmentics in farm animals is very rare (Muntener *et al*., 2010). But certain incidences during which accidental ingestion/ administration of toxic doses may lead to development of toxicity.

Oxyclozanide is salicylanilide anthelmentic with flukicide property. Salicylanilides acts selectively on parasites through uncoupling of oxidative phosphorylation. The dose rate of oxyclozanide in cattle is 10-15 mg/kg once orally. Salicylanilides are moderately safe compounds and have safety factors of approximately 3–6 times the recommended dose levels (Swan and Schroder, 1981). Classical clinical signs of poisoning in animals are blindness, paresis and death although blindness is an inconsistent toxic effect in affected cattle. General signs associated with uncopling of oxidative phophorylation like hypersalivation, hyperthermia, convulsions and tachycardia may also be present. Hematological changes like neutrophilia, lymphopenia were also observed (Swan, 1999). Walley (1966) has reported symptoms like depression, anorexia and diarrhea in sheep and cattle administered with higher dose (25 mg/kg BW/day) of oxyclozanide.

Levamisole is an anthelmentic of imidazothiazole class with immunostimulant property. It eliminates parasites by neuromuscular activity. Dose of levamisole in cattle is 7.5 mg/kg once orally. The adverse effects of levamisole overdose are attributed to narrow therapeutic index and stimulation of nicotinic acetylcholine receptors and subsequent reduction in convulsion threshold (Rehni and Singh, 2010), paralysis of respiratory muscles and asphyxia (Hsu, 2008). Plumb (1999) reported pulmonary edema and allergic skin reactions in dogs and death due to respiratory failure in dogs given overdose of levamisole. Hematological changes like erythrocytopenia, decreased hemoglobin and haematocrit as well as increased activity of liver enzymes and urea were reported in dogs poisoned with levamisole (Gokce *et al*., 2004).

In the present incidence of oxyclozanide- levamisole combined toxicity, characteristic signs were salivation, fever, cutaneous vasodilatation, tachycardia, tachypnea and severe respiratory distress. Severe anal straining was observed that may be due to abdominal pain caused by excess dose of anthelmentics. Heamatology revealed leukocytosis with neutrophilia, lymphocytosis and thrombocytopenia. As there is a combination of one rapid acting and one slow acting compound, clinical recovery started from the 2nd day of treatment but complete recovery required 5 days treatment. So it can be concluded that such cases of combined anthelmentic poisoning in farm animals could be managed with supportive treatment and patient monitoring.

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