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Fenbendazole and praziquantel resistance in *Moniezia expansa* in Jamunapari goat kids

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Abstract

Five Jamunapari goat kids of 3-4 months weighing 5-7 kg were reported with the history of inappetence, diarrhoea and cachexia. Haematological and biochemical examination revealed anaemia and Hypoalbuminemia. On faecal examination infection of *Moniezia expansa* was confirmed. Here we reported a chronic case of *Moniezia expansa* was resistant to fenbendazole and praziquantel but responded on single dose of Albendazole and niclosamide combination.

Keywords: Fenbendazole and praziquantel, *Moniezia expansa*

Introduction

Goat is oftenly called as poor man's cow. Gastrointestinal tract (GIT) parasitism in sheep and goats causes economic loss to marginal and land less farmers of this country. Climatic conditions of tropical countries are highly favourable for helminthic transmission [7].

Moniezia expansa is common cause of cestodiosis in large and small ruminants but it is commonly called as sheep tapeworm, which causes gastrointestinal tract (GIT) parasitism in sheep and goats [1-4]. *Moniezia* causes substantial damage to sheep or goat by believed that loss of condition, diarrhoea, exhaustion, and intestinal impactions. As per Suchita *et al.* [8], kids are more prone to *Moniezia spp.* infection than the adult animals.

The eggs of *Moniezia expansa* are triangular in shape and contain one embryonic tapeworm which got released during defecation by host. Cooked rice appearance inter proglottid gland or segments can be identified on direct faecal examination. The free-living forage mite or oribatid mites act as the intermediate hosts for tapeworm egg. Inside these mites the formation of cysticercoids takes place over a period of 1 to 4 months [5, 6].

Anthelmintic resistance is became a major problem of concern in veterinary practice, threatens agriculture income and animal welfare [9]. Anthelmintic like; Albendazole, fenbendazole, niclosamide and praziquantel are effectively used in management of *Moniezia expansa*, but praziquantel is considered as the drug of choice for tapeworms in all species [6].

Case Report and Methodology

Five Jamunapari goat breed kids aged between 3-4 months weighing 5 to 7 kg at Livestock farm Complex, Veterinary College and Research Institute Tirunelveli were reported with inappetence, diarrhoea and cachexia. On physical examination animals were found as dull with rough hair coat. Clinical examination revealed all vital parameters were in normal range. Haemato- biochemical examination revealed anaemia and hypoalbuminemia. Faecal examination revealed presence of tape worm proglottid segment. Macroscopically and microscopic examination revealed triangular shaped *Moniezia expansa* egg. On the basis of history, haemato- biochemical and faecal examination cases were diagnosed as cestodiasis due to *Moniezia expansa*.

Treatment

Animals were treated with Fenbendazole 25mg and Praziquantel 5 mg/ml suspension @1ml/3kg body weight. After five days post treatment animals did not shown any improvement and one kid died. On post-mortem examination kid's intestines were densely loaded with adult tape worms. Subsequently animal was treated with niclosamide 500mg and albendazole 150 mg/ 5 ml suspension @ 2ml/3 Kg body weight single dose and Inj. Enrofloxacin 7.5 mg/Kg body weight i/m to reduce secondary bacterial infection, ayurvedic anti-diarrhoeal powder @ 20 gm thrice a day followed by injection B1, B6, B12 @ 1ml i/m for three consecutive days. Animals had uneventful recovery.

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Results and Discussion

In present cases, 16 hrs post treatment animals evacuated the multiple white colour, thread like flattened adult cestodes with faeces which were hanging from anus (Figure 1 and Figure 2). Third day post treatment animals were active, feeding improved and defecation was normal. After fifteen days post treatment faecal examination revealed no parasitic eggs or inter proglottidal segments.

Moniezia expansa is a very common endoparasite of small ruminants. Even though the economic losses caused by *M. expansa* are not severe as compared to the nematode, the Monieziasis is still a cause of chronic dullness and illness in sheep and goat farming [2, 10]. *Moniezia spp.* commonly affects young kids during first year of their life than that of older animals. Seasonal influence also promotes the infection during the tropical summer due to the more population of free living mites which acts as intermediate host [8, 11]. These reports are in accordance to our study as all five animals affected were kids below six month of age and Livestock farm Complex, Veterinary College and Research Institute Tirunelveli is geographically situated in the tropical climate which provides favourable conditions for transmission of parasitic infection.

Severely infected animals had adverse clinical pictures such as stunted growth, pot-belly appearance, ruffled hair coat and anaemia [12]. In our study also animals had anaemia and hypoalbuminemia and one kid died which could be due to poor protein absorption and severe infection.

Indiscriminating way of using antihelminthic drugs for mass deworming in the flocks is the main cause of antihelminthic drugs resistance in human medicine and veterinary practices. In past reports by Boray [13], praziquantel, is not effective against *Fasciola hepatica* and triclabendazole is the most effective drug against it. On the other hand triclabendazole was found resistance in sheep in Australia, Ireland and Scotland. As per Morris and Taylor [14], albendazole was found resistant to larval *Echinococcus granulosus*. Gerald [15] suggested that adult tapeworms might develop resistance to praziquantel in due course of time, but there have been no reports and research this area. Present study, first time reports resistance of praziquantel and fenbendazole in goat kids against *Moniezia expansa* in India, which is in accordance to Boray [13], Morris and Taylor [15] and Gerald [16].



1.

2.

Fig 1, 2: 16 hours Post Treatment excretion of *Moniezia expansa* in a Jamunapari Kid

Conclusion

This case study reports successful treatment of fenbendazole and praziquantel resistant *Moniezia expansa* in four numbers of Jamunapari goat kids with niclosamide and albendazole

combination. This communication is first time in India about resistance of fenbendazole and praziquantel in veterinary practice.

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