

TOXOCAROSIS IN CALVES: SHALL WE CONTINUE WITH PIPERAZINE THERAPY?

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The ascarid worm affecting cattle is *Toxocara vitulorum*. Patent infections occur only in calves below four months. Both white and black cattle are affected and heavy infections are often fatal in the latter resulting in heavy economic losses if not treated at the right time. The age old therapy still being followed is to treat all calves by the third week of life with a piperazine salt followed by a couple of treatments at monthly intervals.

It was considered for a long time that calves get infection directly from embryonated eggs, prenatally or by the transmammary route. An elaborate and painstaking research work carried out by Roberts in the University of Peradenya, Sri Lanka with the financial assistance from CSIRO, Australia brought forward new insights regarding the life cycle of *T. vitulorum* (Roberts, 1993). It has been proved conclusively that the mode of transmission to calves is from the mother after parturition through the transmammary route. Another important finding was that transmission is taking place only up to the 12th day of parturition with the majority being transmitted by the eighth day. It is a well known fact that piperazine can act only against adult worms and the immature worms are left behind in the intestine of the treated calf.

An infected calf sheds millions of eggs per day which are spherical to sub spherical having a thick pitted wall and unsegmented embryo. The eggs contaminate the soil and embryonate under suitable conditions of temperature and humidity. Such an infective egg is quite resistant and can survive for prolonged periods of time. Most ascarids are highly host specific and this is true for *T. vitulorum* as well. Ingestion of these eggs by a suitable definitive host of any age will result in hatching and the released larvae invade various tissues and encyst there. Only in the female animal during the last quarter of pregnancy, these larvae are mobilized to migrate to the mammary gland. From there they are excreted along with milk to infect the suckling calf.

In the traditional therapy being followed against toxocarosis administered, the worms in the intestine of the calf is getting an opportunity to mature and contaminate the soil with the resistant eggs. These eggs

are a potential threat to all future calves to be born in the area.

Based on the research findings, Roberts advised a single treatment with a drug that is effective against the immature worms also to be administered to all calves by 10-14 days of age. In a tropical country like India we must consider that all calves are infected and need not wait for a fecal sample examination to dose a calf against toxocarosis. When this regimen was adopted in Sri Lanka for a couple of years, toxocarosis could be eliminated to a large extent averting significant loss to the buffalo farming in particular. The simple message of treating all calves by a single dose of pyrantel/morantel @ 10 mg/kg at 10-14 days of age was conveyed to the largely illiterate farmers through pamphlets/posters displayed at veterinary clinics and co operative societies.

The above dosage schedule is economically more feasible than the conventional therapy. The latter costs around Rs. 100/- for the treatment of toxocarosis alone. When pyrantel/morantel is used, a single treatment can take care of the ascarid infection in the calf, as all the larvae transmitted to the calf are removed. No further transmission is occurring after the 12th day. Again, pyrantel/morantel being broad spectrum anthelmintics can take care of *Strongyloides* sp. transmitted by prenatal, transmammary and direct routes; all at a cost of less than Rs.10/- per calf. As the calf is weighing minimum at 10-14 days of age the cost of treatment is also reduced considerably. However, the most important aspect is that the worms are not getting a chance to contaminate the soil as they are removed before attaining sexual maturity. This practice if followed unscrupulously for a few years can eradicate *T. vitulorum* infection from cattle in a particular area and save the farmers from a lot of agony.

Deworming schedule to be followed in calves

1. Treat all calves at 10-14 days of age with pyrantel/morantel @ 10 mg/kg body weight
2. Second treatment at three months with a broad spectrum anthelmintic such as benzimidazole compounds

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