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STUDIES ON THE EFFICACY AND SAFETY OF QUINAPYRAMINE SULPHATE AGAINST TRYPANOSOMIASIS IN NATURALLY INFECTED HORSES AND DONKEYS

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ABSTRACT

Efficacy and safety of Quinapyramine sulphate at different dosage levels, was studied using seven horses and eleven donkeys naturally infected with *Trypanosoma evansi*. The animals were divided into four groups. Groups I, II and III were given Quinapyramine sulphate subcutaneously @ 2.0, 2.5 and 3.0 mg/kg of body weight, respectively. Group IV was kept as infected untreated control. The study revealed that Quinapyramine sulphate was quite effective against *Trypanosoma evansi* infection at a dosage level of 3.00 mg/kg body weight. Under-dosage of the drug may lead to drug resistance thereby resulting in relapse infections. Further, in view of the side effects, it is suggested that the total dose of the drug should not be given in one shot.

INTRODUCTION

Trypanosomiasis is an important zoonotic disease affecting almost all the mammals with variable intensity. This classical disease entity in the Indo-Pak sub-continent occurs in horses and is known as surra. It is nearly always fatal to horses if treatment is not applied (Soulsby, 1982).

Various measures undertaken for the control of this disease include vector control, chemotherapy and vaccination. It is due to the problems involved in maintaining vector control and the absence of effective vaccine that the livestock almost entirely depends on trypanocidal drugs, for prevention and treatment of trypanosomiasis. The development of drug resistance in trypanosoma populations has further limited the choice of effective drugs available to veterinarians and livestock owners. In Pakistan many drugs are used for the treatment of surra but no authenticated data are available regarding the efficacy and safety of these drugs. The present study was, therefore, planned to deter-

mine the efficacy and safety of Quinapyramine sulphate against *Trypanosoma evansi* in naturally infected horses and donkeys.

MATERIALS AND METHODS

Seven horses and eleven donkeys naturally infected with *Trypanosoma evansi* were included in the study. These were randomly divided into four groups. Groups I, II and III comprised of two horses and three donkeys each and group IV had one horse and two donkeys. The animals in groups I, II and III were given Quinapyramine sulphate subcutaneasly @ 2.0, 2.5 and 3.0 mg/kg of body weight, respectively. Group IV served as infected untreated control. Blood smears of all the experimental animals (including controls) were prepared on day 3, 6, 9, 12, 15, 22, 29, 36, 43, 45 and 60 post-treatment to evaluate the efficacy of the drug. Side effects of the drug were also noted to determine its safety.

RESULTS AND DISCUSSION

All the animals in group I were found completely free from *Trypanosoma evansi* infection from day 3 to day 29 post-treatment. However, blood smears from 2 out of 3 treated donkeys and both the horses of this group showed the presence of *Trypanosoma evansi* on day 36, 45 and 60 post-treatment. Similarly, thick and thin blood smears from animals of group II did not show the presence of *Trypanosoma evansi* from day 3 to day 43 post-treatment. However, on day 45 and 60 post-treatment, blood smears from one horse and one donkey of this group showed *Trypanosoma evansi*. All the treated animals of group III were found completely free from *Trypanosoma evansi* infection from day 3 to day 60 post treatment.

Blood smears from one donkey and one horse of group IV (infected untreated control) remained positive for *Trypanosoma evansi* throughout the trial period of 50 days. They had intermittent fever and petecheal haemorrhages on the mucous membrane of eyes. They were observed to become anaemic day by day and lost weight persistently. One donkey of this group died on 10th day after the start of the experiment due to acute nature of the disease.

Side effects like salivation, perspiration, muscular twitching, falling and rising, and pawing and rolling on the ground were observed soon after the administration of drug in all the treated animals. The severity of these side effects-

varied with the level of dosage. These were more pronounced and severe in the animals given higher levels of the drug. Duration of these effects in horses was recorded to be ½, 1½ and four hours in the animals in groups I, II and III, respectively. These symptoms in donkeys were of milder nature and lasted for 15, 20 and 30 minutes in animals in groups I, II and III, respectively.

Recurring infection after treatment of livestock in the field have normally been attributed to drug resistance, under-dosage or the acquisition of new infections. Relapse infections may also take place due to the survival of some of the trypanosomes in cerebrospinal fluid where the drug did not reach them in effective concentrations (Boero, 1954). In the present study relapse infections in the animals in groups I and II might be due to under-dosage of the drug resulting in survival of some of the trypanosomes in the cerebrospinal fluid. Possibility of new infection can be ruled out because of non-occurrence of relapses in the animal of group III kept under similar type of field conditkons.

Side effects observed in the study under report are in agreement with Jamil *et al.* (1954), Awan and Jhonston (1979) and Soulsby (1982) who have also reported such symptoms in horses when trveated with Quinapyramine sulphate. These effects could be due to the affinity of Quinapyramine sulphate for sensory nerve endings resulting in quick side effects.

Death of one donkey of control group is quite in line with Soulsby (1982) and Anwar and Muhammad (1986) who have reported the disease to be fatal if treatment is not applied. However, survival of one donkey and one horse of this group might be due to a mild infection.

The study has revealed that Quinapyramine sulphate is effective against *Trypanosoma evansi* infection at a dosage level of 3.0 mg/kg body weight. Under-dosage of the drug may lead to drug resistance thereby resulting in relapse infections. Further, in view of the side effects, it is suggested that the total dose of the drug should not be given in one shot.

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