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RESEARCH COMMUNICATION

CHEMOTHERAPY OF EXPERIMENTAL *BESNOITIA BESNOITI* INFECTION IN RABBITS

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ABSTRACT

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Rabbits were infected with a bovine strain of *Besnoitia besnoiti* parasites derived from VERO cell cultures. Oxytetracycline*, given at 30 mg/kg i.m. simultaneously with infection, prevented the development of orchitis. The controls received no treatment. All infected animals showed a transient febrile reaction. It is concluded that oxytetracycline has some therapeutic potential against *Besnoitia besnoiti* and that rabbits are suitable models for therapeutic trials.

INTRODUCTION

Bovine besnoitiosis is an economically important disease caused by the protozoan *Besnoitia besnoiti*. Although the disease was discovered at the end of the last century (Cadëac, 1884, cited by Pols, 1960), and an effective vaccine has been developed in South Africa (Bigalke, Basson, McCully, Bosman & Schoeman, 1974), no effective cure has been discovered for the disease in cattle. Work done recently in Israel, however, indicated that oxytetracycline treatment of gerbils (*Meriones tristrami shawii*) infected with a lethal dose of *B. besnoiti* led to the complete recovery of these animals (Shkap, Marcovitz, Pipano & Greenblatt, 1982).

In the present study, attempts were made to repeat the oxytetracycline therapy investigation in another host system, using a bovine strain of *B. besnoiti* to infect rabbits.

MATERIALS AND METHODS

Besnoitia *strain*

Culture-derived *B. besnoiti* of a strain (BB), isolated from a naturally infected bull and maintained *in vitro*, as described by Bigalke (1962), was used to infect rabbits 2–4 months of age.

Chemotherapy trials

In this experiment 24 rabbits, in 2 groups of 12 each, were infected intraperitoneally, at a dose rate of 1×10^6 organisms. Six animals in each group were infected and treated concomitantly with a long-acting formulation of oxytetracycline* at a dose rate of 30 mg/kg, and 6 were used as untreated controls. Rectal temperatures were monitored daily.

RESULTS

All the rabbits (both treated and untreated) in the 2 groups infected with the BB strain developed a fever (≥40 °C) from Day 3–Day 5 which lasted until Day 10—Day 21 after inoculation. All the untreated male rabbits showed a pronounced orchitis (induration and hardening of the testes), in contrast to the treated ones, which developed only a febrile reaction.

One untreated control in the 1st group died on Day 20 post-infection, apparently from a cause unrelated to besnoitiosis.

In the 2nd group, 3 untreated control animals died of besnoitiosis, 1 on Day 12 and 2 on Day 16 post-infection. The condition of the remaining 3 controls that survived the infection was noticeably poorer than that of the 6 treated ones when the experiment was terminated after 30 days.

DISCUSSION

Rabbits were proved to be a highly susceptible and useful laboratory model for experimental besnoitiosis (Pols, 1960). Shkap *et al.* (1982) found that gerbils (*Meriones tristrami shawii*) could be completely cured of besnoitiosis by a single treatment with oxytetracycline. The main object of this study was to determine whether such treatment might influence the disease in rabbits which showed symptoms of a febrile reaction, scrotal oedema, orchitis and necrosis of the scrotum and testes when infected with bovine strains of the organism.

It was clear from this study that the oxytetracycline treatment suppressed infection with a bovine strain of *B. besnoiti*, since none of the treated animals developed orchitis. Whether tetracyclines are of use in the treatment of bovine besnoitiosis has still to be determined.

Oxytetracycline treatment had no detectable effect on the infection when a blue wildebeest strain of *Besnoitia besnoiti* was used. Since this strain is only mildly pathogenic to rabbits, it was concluded that rabbits cannot be considered as a suitable model for therapeutic trails using a blue wildebeest strain (V. Shkap, unpublished data, 1983).

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* Terramycin/L. A., Pfizer

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