

SERO-EPIDEMIOLOGICAL SURVEY OF *D. VIVIPARUS* IN MISSOURI WHITE-TAILED DEER

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Blood from deer was collected on opening day of deer hunting season in November, 1992 and 1993. Sera was tested with an ELISA developed to detect antibodies to Dictyocaulus viviparus in cattle and modified for deer. Of 1771 animals, 741 (41.8 ± 1.1%) were sero-positive for D. viviparus-specific antibodies. Adult female deer (51.7 ± 3.5%) had a significantly greater sero-prevalence than did adult male deer (38.1 ± 2.2%) indicating an interaction between age and sex. Exposure to D. viviparus by white-tailed deer is widespread throughout Missouri and no differences exist among the geographical regions of the state.

INTRODUCTION

Dictyocaulus viviparus (*D.v.*) in cattle has been extensively studied since the 1950's. There is some concern that wild ungulates may be responsible for contaminating cattle pastures with *D.v.* larvae. In North America, moose, black-tailed deer, elk, caribou, American bison and white-tailed deer are naturally infected with *D.v.* (Anderson and Prestwood). In previous studies lungs of hunted deer were used to detect *D.v.* In the southeast, 29.8% of 806 white-tailed deer harbored adult *D.v.* in their lungs (Prestwood et al.), while South Dakota (Boddicker and Huggins) and Pennsylvania (Beaudoin et al.) only reported prevalences of 3.6% and 3.8%, respectively. A sero-prevalence survey for *D.v.* was conducted in white-tailed deer using an ELISA modified for deer.

MATERIALS AND METHODS

Blood samples were collected from 1771 white-tailed deer on opening day of firearms season, November 14, 1992 and November 13, 1993. Serum was removed from the clotted blood after centrifugation at 1500 rpm for 10 minutes and frozen at -29°C. Deer <6 months were considered fawns; deer 1.5 years of age, yearlings and deer 2.5 years or older, adults. A highly sensitive and specific ELISA for detection of antibodies against *D.v.* in cattle and modified for deer was used (Bates et al.). Confidence intervals (95%) were constructed for comparisons.

RESULTS

Out of 1771 animals, 741 (41.8 ± 1.1%) were sero-positive for *D. viviparus*-specific antibodies. When considering age, 42.0 ± 2.4%, 43.1 ± 2.0% and 41.8 ± 1.8% of fawns, juveniles and adult deer were sero-positive. Adult female deer (51.7 ± 3.5%) had a significantly greater sero-prevalence than did adult male deer (38.1 ± 2.2%) but did not differ significantly from female juvenile or fawns indicating an interaction between age and sex. There was no significant difference in sero-prevalence among males of the three age classes. There were no significant differences in prevalence among the nine geographical regions.

DISCUSSION

This is the first sero-epidemiological study of any deer species in North America. Overall *D.v.* sero-prevalence of 42% is similar to that reported by Prestwood et al. However, they also reported a marked age and sex difference, with young and males being most infected, whereas, we found that adult female deer were more likely to had exposure to *D.v.*. It should be noted our study detected previous exposure and that observations by Prestwood et al. were from necropsies. Browsing behavior of female and male deer may be different, especially during summer months when does are feeding their young.

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