PREVALENCE OF SPARGANOSIS BY COUNTY OF ORIGIN IN FLORIDA FERAL SWINE

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Sparganosis is a disease found in snakes, reptiles, and mammals, including swine and man. It is caused by migration of the second larval stage (spargana) of the cestode *Spirometra*.[1-4]

Human sparganosis occurs worldwide. The majority of cases have been reported from China, Korea, Japan, and Southeast Asia. Approximately 70 cases of human sparganosis have been reported from the United States, most from the southeast region of the country.[5] Transmission to humans has occurred through intact mucous membranes, by ingestion/handling of frogs and snakes, poultry, and pork, and by ingestion of contaminated water.[1,4] Disease in man can produce subcutaneous, cerebral,[5] ocular, visceral, and mastitic forms depending upon the migration of the parasite.

Sparganosis was first reported in swine in 1911 in Indochina. It has also been reported in Europe, Formosa, Sumatra, Madagascar, and in feral swine in Australia.[2, 7-8] Sparganosis was identified in Florida feral swine in a Texas slaughter facility in 1998. Objectives of this study were to determine 1) overall prevalence of Sparganosis in Florida and Texas feral hogs slaughtered in a Texas slaughter establishment, and 2) determine the prevalence of sparganosis by county of origin in Florida feral swine slaughtered in a Texas slaughter establishment.

Materials and Methods

Data collection on the incidence of gross sparganosis in Florida and Texas feral hogs began when lesions were first observed in April 1998.[9] Tracebacks to the county of origin for Florida feral hogs with sparganosis lesions were conducted. In May 1999, collection of county of origin data of all Florida hogs slaughtered at the establishment was initiated. These data provided the means to estimate prevalence of sparganosis by Florida county.

Data were analyzed to determine whether sparganosis prevalence in affected Florida counties was significantly different from the prevalence of sparganosis in Highlands county. Highlands county was selected as a comparison group because it had the greatest number of cases and the greatest number of feral swine slaughtered. Odds ratios for county of origin (exposure = county, outcome = sparganosis; comparison

group = Highlands) were determined. Associations that had p values ≤ 0.05 and 95 % confidence intervals (C.I.) that did not include 1 were considered significant.

Results

In 1998, *Spirometra* was found in 4.85% (240 of 4,949) Florida feral hogs slaughtered. By contrast, lesions were identified in 12 feral swine carcasses from Texas out of 45,290 (0.26%) carcasses examined in 1998.

Through the end of 1999, there have been 644 cases of sparganosis in Florida feral hogs. The overall prevalence is 5.86% (644 of 10,981). Sparganosis has been detected in only 0.02% (17 of 79,177) of Texas feral swine slaughtered at this establishment. Affected Texas swine originated from eight different counties, concentrated primarily in the south-central part of the state.

Since county of origin data collection on all Florida feral swine began (May 1999), the overall prevalence of sparganosis is 6.9 % (339 of 4880) in Florida feral swine. Sparganosis has been detected in hogs from 17 Florida counties.

Of 17 Florida counties where sparganosis was detected, Highlands county had the highest case count (132) and the greatest number of feral swine slaughtered (1904). Its 6.9% prevalence was indistinguishable from overall Florida prevalence. Highlands county was used as the comparison group in the analysis. Osceola and Hillsborough counties had a prevalence of 4.3% and 1.8% respectively. Originating from Osceola or Hillborough counties was associated with a decreased risk for sparganosis than coming from Highlands county [(Osceola: Odds ratio = 0.60; C.I. = 0.36 – 0.97; p value = 0.04); (Hillsborough: Odds Ratio = 0.24; C.I. = 0.05 – 0.74; p value = 0.02)]. By contrast, originating from Marion county was associated with an increased risk for sparganosis (Odds ratio = 3.72; C.I. = 2.16 – 6.20; p value < 0.01). The prevalence of sparganosis in feral swine originating in Marion county was 21.7%. Prevalence in the other 13 counties studied was not significantly different from Highlands county.

Discussion

Results of this study demonstrate that sparganosis is not an unusual finding in Florida feral swine slaughtered at a federal abattoir. Further, three counties have been found to have different prevalence from the prevalence in Highlands county. Animals originating from Osceola or Hillsborough counties have a lower prevalence than Highlands. Swine from Marion county have a higher prevalence. This may aid processors of Florida feral swine in determining where to concentrate trapping efforts to minimize the number of diseased animals obtained.

Data gathered for this study has limitations. Distribution and prevalence data represent only those animals received at one federal slaughter establishment. The sampled population of animals is dependent upon the location of traps, availability

and ease of obtaining swine, geographical features, weather conditions, seasonal variations, and other factors. These factors preclude generalizing results to all feral swine. Sparganosis in other southeast US states has been reported in the literature.[10] Identification of sparganosis in feral swine examined at slaughter is based solely on gross pathologic findings. It is likely that the presence of *Spirometra* serologically is higher than reported here. Although a serum ELISA test exists for Sparganosis in humans, there is currently no such tool for use in swine.[11,12]

Consumption of raw or undercooked feral swine can pose a public health risk for human Sparganosis. Hunters and others who may consume feral swine should be made aware of the importance of thoroughly cooking feral swine carcasses. People living in areas with large populations of feral swine should be aware that drinking contaminated water is the most common route of infection.

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