

Regional emergence of TB lesions in swine identified at slaughter

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Objective

This paper characterizes a regional outbreak of tuberculosis (TB) in market swine by combining local swine producer-based information on condemned stock at slaughter with geographically broader FSIS Animal Disposition Reporting System (ADRS) data. This study aims to obtain summary information on anomalous swine TB (STB) condemnations at slaughter, compare critical outbreak time frames between outbreak areas and identify the geographical spread of abnormally high STB condemnations.

Introduction

A case study presented at the November 2010 Iowa Annual Swine Disease Conference for Swine Practitioners detailed increases in STB lesions beginning January 2010 (1). Producers were informed of the problem by their swine processing facility. Tissue samples from affected producers were culture-positive for *Mycobacterium avium*. In the spring of 2010, USDA Veterinary Services (VS) began monitoring weekly ADRS STB carcass condemnation data after a VS Staff Officer was made aware of unusual increases in STB condemnations in another region. By June 2010, STB condemnation rates in both of the affected areas decreased to typical seasonal levels; however, beginning January 2011, rates again rose beyond baseline seasonal highs, exceeding those seen in the 2010 outbreak.

Methods

The ADRS provides weekly condemnation data to VS along with information on species and total number of animals slaughtered. June 2007–May 2011 ADRS market swine data were grouped by three major swine production areas (basins) to (1) identify pre-outbreak condemnation baselines, (2) quantify differences in the 2010 and 2011 STB outbreaks and (3) ascertain the geographical extent of the outbreaks. In addition, a fourth basin was created representing the remainder of U.S. market swine slaughter plants. To identify critical weeks of anomalous condemnations, a modification of the 'C3' version of the Early Aberration Reporting System was applied to the STB condemnation series (2). In addition to examining alerts by basin, the alerting algorithm was applied to individual plant data. Data processing was performed using SAS version 9.1 and an Excel-based 'Alerting Algorithms Tool' developed and published by Dr. Howard Burkom (3).

Results

Mean weekly swine TB condemnation rates, which seasonally ranged from 5.7 to 21.4 per 100,000 between 2007 and 2009 (mean = 10.7, SD = 3.0), increased above typical levels beginning January 2010 and rose even higher beginning January 2011 (Fig. 1). Most of the increase was due to condemnations in Basin 3, which experienced 670/100,000 weekly STB condemnations at the height of the 2011 outbreak. Summary data for Basins 1, 2 and 4 indicate that condemnation profiles remained at non-outbreak levels over the 4-year data series. Retrospective analysis by individual facility suggests that while condemnations in Basin 1 appeared to coincide with typical

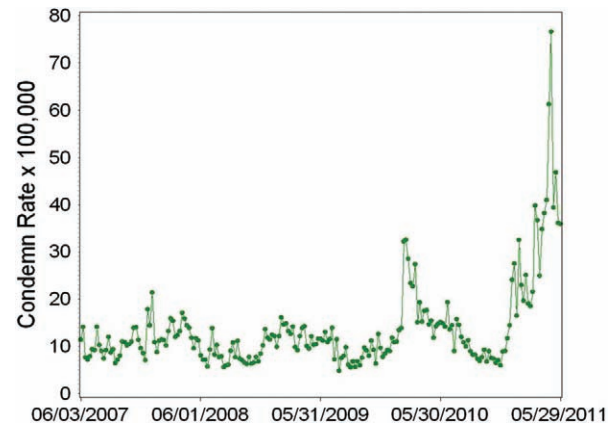


Fig. 1. Weekly swine TB condemnation rates, four-year series.

seasonal STB rates, the pattern of alerts for one facility may have signaled STB outbreaks in both outbreak periods.

Conclusions

By combining 'on-the-ground' practitioner-based information with geographically broader analysis of ADRS data, we identified an emerging disease situation involving TB lesions in swine. A preliminary epidemiological investigation suggests that likely principal risk sources are related to feed and ground water (1). Analysis of ADRS condemnation data suggests that several lower Midwest slaughter facilities in addition to the affected plant used by producers involved in the investigation may have been affected by STB.

Keywords

Abattoir; surveillance; syndromic

References

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