Transboundary and Emerging Diseases

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RAPID COMMUNICATION

Congenital Jaundice in Bovine Aborted Foetuses: An Emerging Syndrome in Southern Belgium

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Summary

Southern Belgium faces an unusual recent increase of icteric bovine aborted foetuses. In the necropsy room, the majority of foetuses presented jaundice and splenomegaly. Despite a wide range of analyses, no definitive cause of abortion has yet been established but some analysis results support the leptospirosis hypothesis. This first description of cases will help veterinary practitioners to recognize more cases and to conduct those to the laboratory for future investigations.

Introduction

Southern Belgium (Wallonia region) faces an unusual situation with the drastic increase of congenital jaundice cases in bovine aborted foetuses. This unexpected event was notified on the 1st September 2014 by the Regional Association for Animal Registration and Health (ARSIA) to the competent authority, that is the Federal Agency for the Safety of the Food Chain (FASFC).

In Belgium, as in many other European countries, the reporting of bovine abortions and the subsequent analysis of their products for brucellosis are mandatory. An additional standardized panel of analyses, which is designed to screen a large number of pathogens associated with bovine abortion (see below) and routinely applied on foetuses submitted to the ARSIA laboratory, failed to identify the origin of these abortions.

During the last 6 years, cases of abortions with jaundice have been notified but the monthly incidence of these cases never exceeded 4% or more than 3 absolute cases per month. Since July 2014, more than 90 new cases of bovine aborted foetuses with jaundice have been reported by ARSIA pathologists, with a maximum monthly incidence of 9.37%. The incidence rate of icteric bovine aborted foetuses was significantly higher in September compared to the mean monthly incidence of the six previous years (linear regression; P-value = 0.04). Concomitantly, an approximate 70% increase in the number of reported abortions

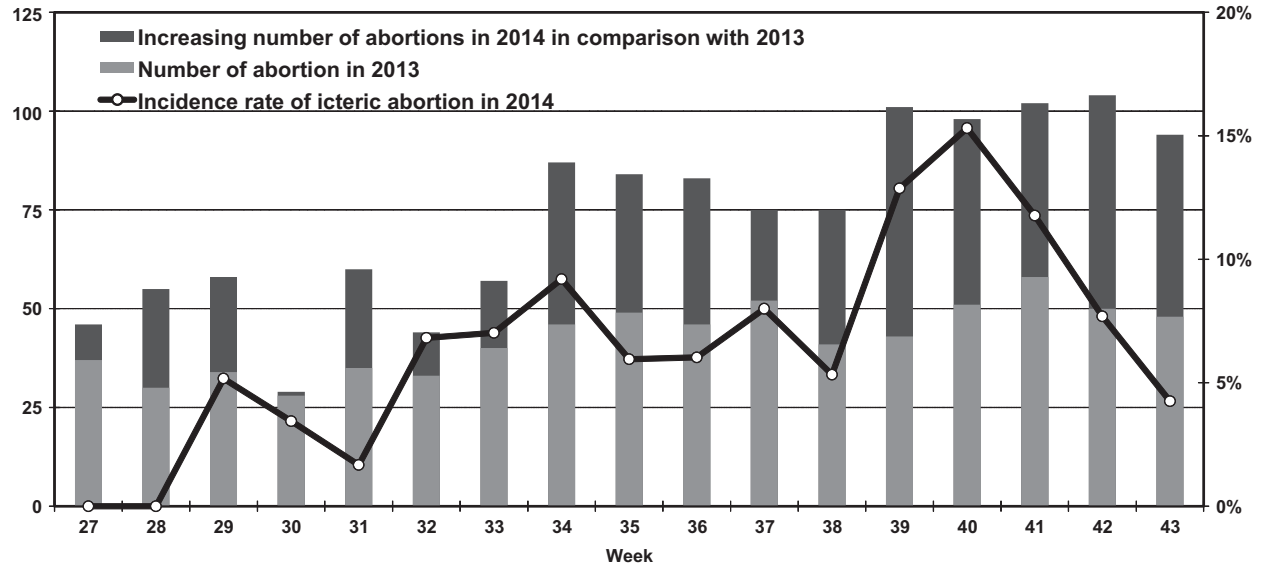

Fig. 1. Trends of icteric bovine aborted fetuses rate and the absolute number of abortions notified.

was also observed compared to the previous year for the months of July, August and September. The peak of the weekly incidence was reached in the first week of October 2014 (15/98 abortions; 15.31%) (Fig. 1). Then, the rate of foetuses with jaundice dropped to 4.36% 3 weeks after peaking, whereas the number of reported abortions remained above the 2013 level for the same reporting period. In addition, abortions with jaundice were not distributed homogeneously in the study area (Fisher's exact test, *P*-value = 0.03). There were significantly more cases in Hainaut ($N = 29$) and Namur ($N = 17$) provinces than in the three other provinces ($N = 13$) (Fisher's exact test, *P*-value = 0.002). From the affected farms, only one case of bovine aborted foetus was identified in 95% of the farms and two cases in the remaining other 5%, which appears to be important information with regard to the epidemiology of the disease.

In the necropsy room, the majority of icteric bovine foetuses presented splenomegaly (Fig. 2) and/or liver parenchyma uniformly coppered and/or perirenal haemorrhage and/or haemorrhagic oedema; significantly, there was an absence of inflammation within the lymph nodes. Foetal membranes appeared normal, transparent and thin. Histology demonstrated abnormalities in the liver where periportal lymphoplasmacytic infiltration and deposition of gold-brownish pigments in hepatocytes or in the bile canaliculi were observed. A small number (about 4%) of these abortions have breathed but they died within few hours after birth. All foetuses were submitted for brucellosis analysis and an additional standardized panel of analyses designed to extend the diagnosis of bovine abortions to other dis-

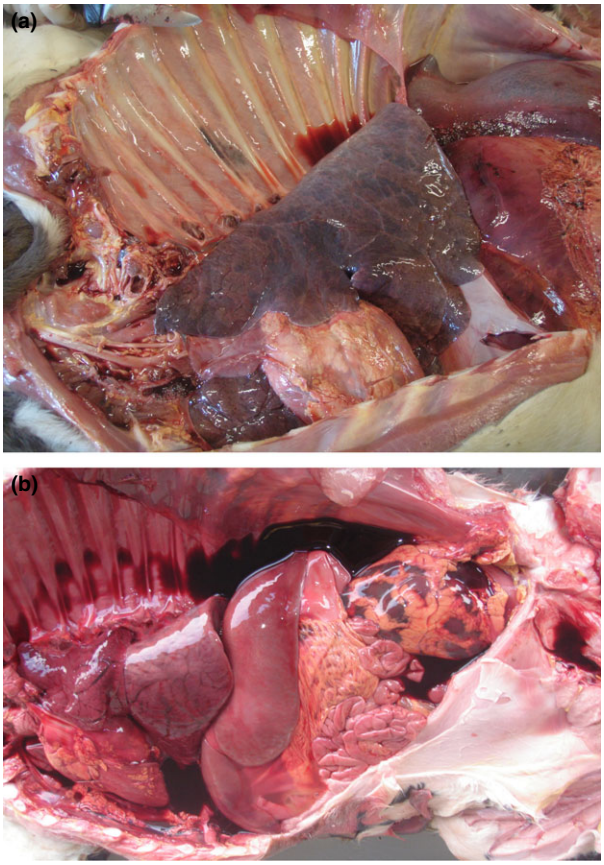

Fig. 2. Bovine aborted foetuses of 9 month old with jaundice (pleura) and splenomegaly. (a) icteric pleura; (b) splenomegaly.

eases than brucellosis, and involving methods for the direct and/or indirect detection of pathogens, such as bacteria (*Listeria monocytogenes, Salmonella Dublin, Coxiella burnetii*, *Anaplasma phagocytophilum*, *Bacillus licheniformis, Campylobacter* spp., *Leptospira borgpetersenii* and *interrogans* serovar *hardjo*), parasites (*Neospora caninum*) and viruses [bluetongue virus serotype 8 (BTV-8), bovine herpes virus 4 (BoHV-4), bovine viral diarrhoea virus (BVDV) and *Schmallenberg* virus (SBV)], several mycotic agents and numerous other opportunistic bacteria. Anamnestic information recorded by veterinary practitioner in a standardized form dedicated to the bovine abortion notification revealed that aborted animals did not show any particular clinical sign and did not receive medication during pregnancy. In addition, in comparison with control cases (non-icteric bovine aborted foetus submitted to the laboratory during the same period), aborted cows did not have any contact with animals purchased or with environmental specific risks (e.g. wood, hedges, rivers and ponds). However, it was possible to demonstrate that more than 95% of these cases occurred during the last third of gestation, and the Blue Belgian cattle was more likely to be affected by this syndrome.

Complementary laboratory diagnosis for bovine leptospirosis performed at the national reference laboratory with the microscopic agglutination test (diagnostic threshold dilution of 1/100) and covering a higher panel of serogroups indicated that 18/19 (95%) cows giving icteric abortions had antibodies against *Leptospira* serogroups Australis or Grippotyphosa. In this group, 13/18 (72%) of positive cows had titres >1/500. Serological analyses in control cows (those giving non-icteric presentation of abortions at time period as the previous group) revealed antibodies against *Leptospira* serogroup Grippotyphosa in 6/22 (27%) with only 1/22 (4.5%) with titre >1/500, serogroup Autumnalis in 1/22 (4.5%) and titre >1/500, and serogroup Ballum in 2/22 (9%) with 0/22 with titre >1/500. The odds ratio to obtain a positive result for *Leptospira* serogroups in cows giving icteric presentation of abortions versus cows giving non-icteric presentation abortions was 48 (95% confidence interval [CI]: 5–442) and 55 (95% CI: 6–521) according to the diagnostic threshold dilution of 1/100 and 1/500, respectively.

The aetiologies for congenital bovine foetal anomalies can be divided into heritable, toxic, nutritional and infectious categories (Whitlock et al., 2008). Although antibodies against *Leptospira* serogroups Australis and Grippotyphosa were observed at high titres in cows delivering icteric abortions, further investigations are needed to confirm leptospirosis as the definitive diagnosis (Radostits et al., 2007). Therefore, until now, the exact origin of this emergence remains unknown but other epidemiological investigations and diagnostic analyses are underway.

We hope that such description of field clinical observations made on this first serial icteric abortion cases will help the veterinary practitioners to recognize more suspected cases and to conduct those to the laboratory for future investigations.

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