

COGI Paris 2014 - Abstract Submission

Topic: Fetomaternal Medicine

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IN UTERO INFECTION BY SCHMALLEMBERG VIRUS INDUCES ARTHROGRYPOSIS MULTIPLEXA CONGENITA IN OVINE FETUSES

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Do you have a preferred presentation method?: Poster

Do you wish to apply for the Young Scientist Award?: No

Problem Statement: Some viral infections occurring during pregnancy are reported to induce *arthrogryposis multiplex congenita* (AMC). In ruminants, vector-borne Bunyaviruses, such as Akabane, LaCrosse, Cache Valley virus are known to induce AMC syndromes in lambs and calves whose dams underwent infection during early gestation. In 2011, Schmallenberg virus (SBV), a new vector-borne Bunyavirus emerged in Europe and heavily affected ruminant offspring born in late 2011 and 2012.

Methods: SBV-affected lambs of the Ovine Research Centre of the University of Namur born in January 2012 underwent necropsy in order to compare lesions with those reported in human AMC. Virological analyses were performed in ewes and offspring order to confirm SBV infection.

Results: Among 99 pregnant ewes, 23 gave birth to lambs presenting an AMC syndrome (n=28). In 11 cases, one healthy sibling was also born. All other lambs were clinically healthy. The most severely affected lambs were stillborn (n=4), 18 lambs died shortly after birth due to breathing incapacity and 6 lambs were euthanized. At necropsy, gender, body weight, macroscopic malformations (scoliosis, torticollis, arthrogryposis, macroscopic central nervous system (CNS) lesions and weight of gonads, lungs...) were recorded. RTq-PCR was performed on CNS tissue aiming at detecting SBV. 13 newborn lambs born in early 2012 and that died from other causes than SBV were used as necropsy controls. Necropsy results are shown in Table 1 and a representative case of an SBV-affected lamb is shown in Figure 1. Serum samples of all lambing ewes were analyzed by seroneutralisation test aiming at SBV antibody detection. Clinically healthy lambs as well as SBV-siblings and underwent precolostral blood sampling aiming at SBV antibody detection. 65% of SBV-affected lambs were positive at Rtg-PCR and all tested sampled showed SBV antibodies. 86% percent of their clinically healthy siblings as well as 44% of clinically healthy control lambs were positive at SNT.

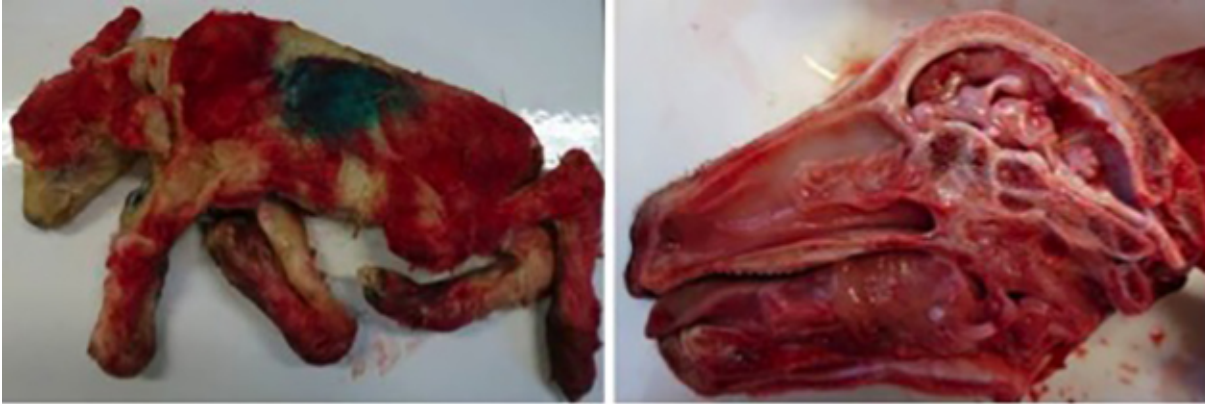
Table 1: Necropsy results

	Death due to SBV (n=28)	Death due to other causes (n=13)
M/F ratio	21:7	8:5
Arthrogryposis	96%	0%
Scoliosis	75%	0%
Torticollis	64%	0%
Macroscopic CNS lesions	81%	0%
Brachygnathia	64%	0%
Cryptorchidism	86%	25%
Testicles weight (g)	3.6±0.25	6.15±0.27*
Lung weight (g)	55.4±8.5	117±13*

*p<0.001

Figure 1: SBV affected lamb with severe front- and rear-limb arthrogryposis and torticollis. Sagittal section of the head shows hypoplasia of cerebrum, brainstem and cerebellum.

Image / Graph:



Conclusion: These data show that fetal SBV infection is able to induce AMC in lambs. Surprisingly, siblings could remain clinically healthy, although fetal antibody production (assessed by procolostral blood sampling) demonstrated that they underwent *in utero* infection. Similarly, clinically normal singletons also demonstrated an active prenatal immune response.

Disclosure of Interest: None Declared