

# ABORTION SHEET VIRUSES



●● Sheep and goats



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**IN SMALL RUMINANTS, ABORTIONS OF VIRAL ORIGIN ARE NOT THE MOST COMMON, BUT THEY CAN SOMETIMES BE ASSOCIATED WITH SIGNIFICANT OUTBREAKS. AMONG THE VIRUSES CAUSING ABORTIONS, CACHE VALLEY VIRUS AND BORDER DISEASE VIRUS ARE PRESENT IN CANADA.**

## INTRODUCTION ●●

Unlike cattle farms in Canada where two viruses are common cause of abortion (IBR and BVD viruses), abortions of viral origin are infrequent in small ruminants. However, they must be considered as a possible cause of abortion since their presence in Canada has been confirmed by serological studies. The two viral infections that are described in this sheet are **CACHE VALLEY VIRUS** (front) and **BORDER DISEASE VIRUS** (back).

## CLINICAL SIGNS ●●

The main congenital malformations observed following a CVV infection are arthrogyriposis (bilateral stiffness of the joints), scoliosis, torticollis, abnormalities of the head, and underdeveloped muscle mass. Sometimes only abortions without congenital malformations are observed. In humans, CVV infection is associated with meningitis and encephalitis.

## DIAGNOSTIC ●●

Samples (aborted fetus / stillbirth, placenta, female serum) should be submitted to provincial laboratory for necropsy so the cause of abortion or congenital malformation can be determined.

## TREATMENT ●●

There is no treatment or vaccination to control the Cache Valley virus. However, it is important to find the cause of abortions / malformations to adjust, if necessary, the management of females in gestation at pasture.

## CACHE VALLEY VIRUS...

Cache Valley virus (CVV) can be transmitted to humans and small ruminants through the bite of infected mosquitoes. **It is therefore a vector-borne zoonotic disease.** The circulation of CVV in Canada has been demonstrated by the presence of antibodies in several sheep flocks and by clinical cases of congenital malformations and abortions in sheep and goats. The risk of abortion and congenital malformations is especially high when ewes and does in early gestation are grazing when mosquito populations are high. ▲▲

*Congenital malformations caused by CVV.*



### TO PREVENT CVV INFECTION, IT IS RECOMMENDED TO REDUCE POSSIBLE CONTACT BETWEEN MOSQUITOES AND EWES IN EARLY PREGNANCY :

- AVOID DRY PONDS AND OTHER STAGNANT WATER SOURCES;
- GRAZE WELL DRAINED PASTURES;
- AVOID GRAZING DURING THE FIRST THIRD OF GESTATION (DURING MOSQUITO SEASON);
- APPLY ANY OTHER MEANS OF MOSQUITO CONTROL WHILE RESPECTING THE ENVIRONMENT.

### SOME FACTS ABOUT CACHE VALLEY VIRUS :

- ◆ Humans become infected strictly by mosquito bite, and not by contact with infected sheep or goats;
- ◆ Global warming could contribute to spreading this disease in Canada in the future.

# Abortions of viral origin

## BORDER DISEASE ...

Border disease is a viral disease of sheep and goats caused by a pestivirus closely related to the bovine viral diarrhoea virus (BVD). Although clinically poorly diagnosed in Canada, the prevalence of sheep infected with Border disease virus was estimated at nearly 10% in a serological study conducted in the early 2000s. BVD is widely distributed in Canada cattle herds and can also infect sheep and goats by causing a similar disease.

### TRANSMISSION ●●

Border disease virus is spread mainly from mother to fetus (vertical transmission) and from one sheep / goat to another (especially by persistent carriers).

### CLINICAL SIGNS ●●

Border disease is also called *Hairy shaker disease* which refers to the appearance of affected lambs that often have tremors and abnormal wool (hair appearance). Other clinical signs observed include infertility, macerated or mummified fetus, stillbirths and weak newborns. When infection occurs during the first third of gestation (see table), some lambs / kids are born immunotolerant, persistent viremia and diarrhoea, ocular and nasal discharge, and breathing difficulties can be noted.

### DIAGNOSTIC ●●

The diagnosis of Border disease can be made by viral isolation and serology of affected individuals.

### PREVENTION ●●

- Slaughter of affected subjects and permanent carriers (persistent viremia);
- Caution should be taken when comingling species.

### STORY OF A CASE :

A farmer making the transition from dairy cattle production to a dairy sheep farm placed about 30 heifers in a pen near one where ewes were being bred. Five months later, he called his veterinarian to ask about shaking lambs with weird wool.

**Clinical diagnostic : clinical signs of Border disease (here BVD).** Blood samples from the heifers found one of them was immunotolerant, so she continually excreted the BVD virus. In this case, the slaughter of the immunotolerant heifer and the infected lambs completely stopped the condition in this farm.



### Time of female infection and clinical signs

|                                      |   |
|--------------------------------------|---|
| <b>Early gestation (First third)</b> | Abortions (mummified or macerated fetuses) or live but immunotolerant newborns (permanent carriers and excretors of the virus, but do not develop the disease). |
| <b>Mid-gestation (Middle third)</b>  | Lambs / kids develop the characteristic signs of Border disease, including tremors and abnormal wool.   |
| <b>Late gestation (Last third)</b>   | Normal or weak lambs / kids not carrying the virus, but having antibodies.  |

### TREATMENT ●●

There is no specific treatment for Border disease.

## OTHER VIRAL CONDITIONS ...

Other viral conditions can cause abortions, include **Bluetongue disease, Rift Valley fever and Schmallenberg virus**. These conditions have never been reported in Canada, but the risk of introduction remains.

**CATTLE WITH BVD CAN TRANSMIT THE DISEASE TO SMALL RUMINANTS AND THE CLINICAL SIGNS WILL BE SIMILAR TO THOSE OF BORDER DISEASE. SINCE SHEEP CAN ALSO TRANSMIT SOME DISEASES TO CATTLE, CAUTION SHOULD BE TAKEN WHEN COMINGLING SPECIES.**

**Cultivons l'avenir 2**  
Une initiative fédérale-provinciale-territoriale

**Growing Forward 2**  
A federal-provincial-territorial initiative

**Canada**

**Québec**

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