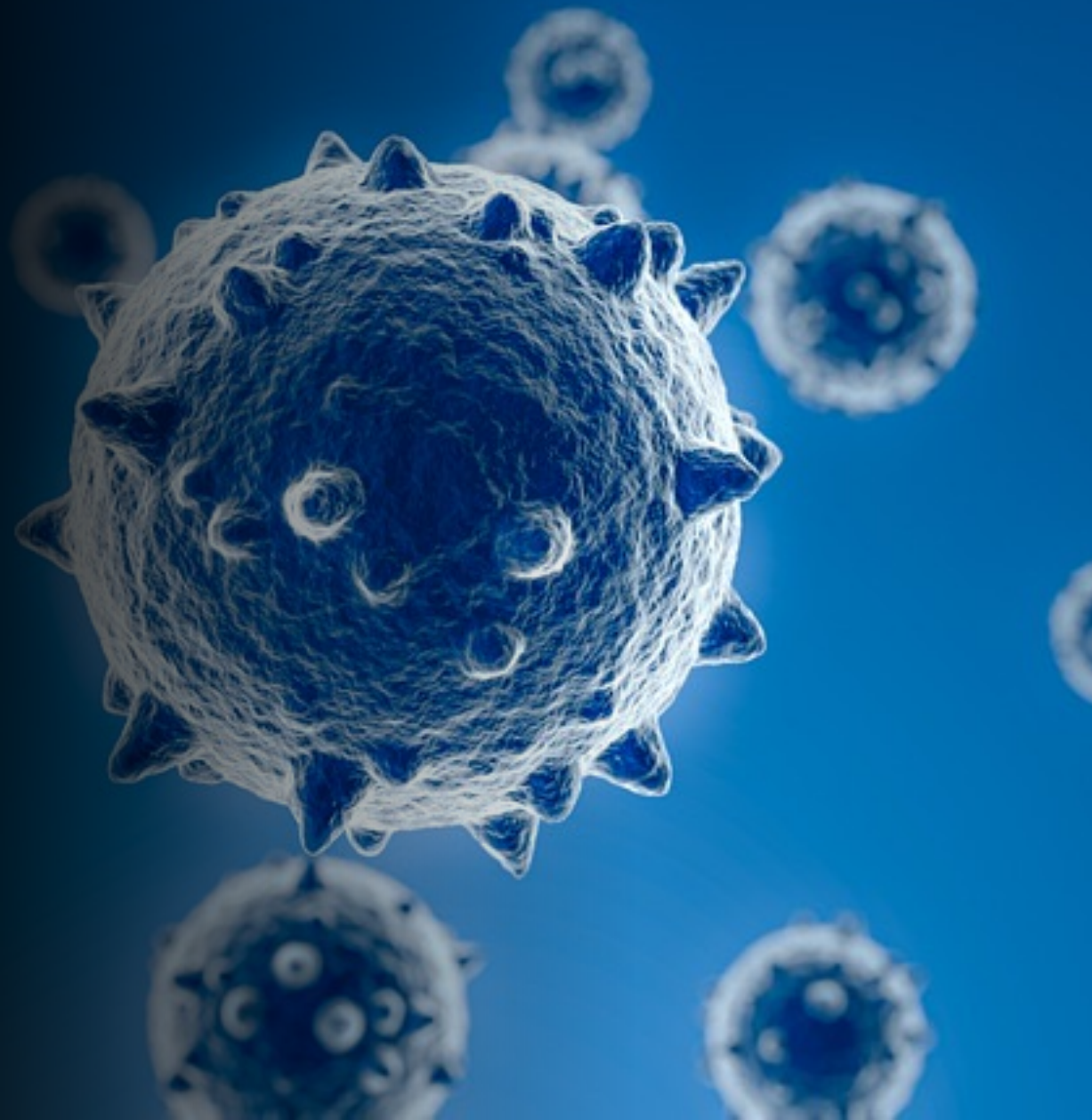
BORDER DISEASE

ETIOLOGY

- Flavivirdae, Pestivirus
- RNA, Enveloped
- The virus could be cultivate in primer and fetal cell cultures
- This virus may cause PERSISTENT INFECTION. (till 60-80 days of pragnancy)
- is closely related to the classical swine fever virus (CSFV) and the BVDV.



Persistently infected lambs are source of infection to other sheep.

- Dams infected one season appear to be immune to subsequent infection. There is evidence that BVDV from cattle can infect sheep.

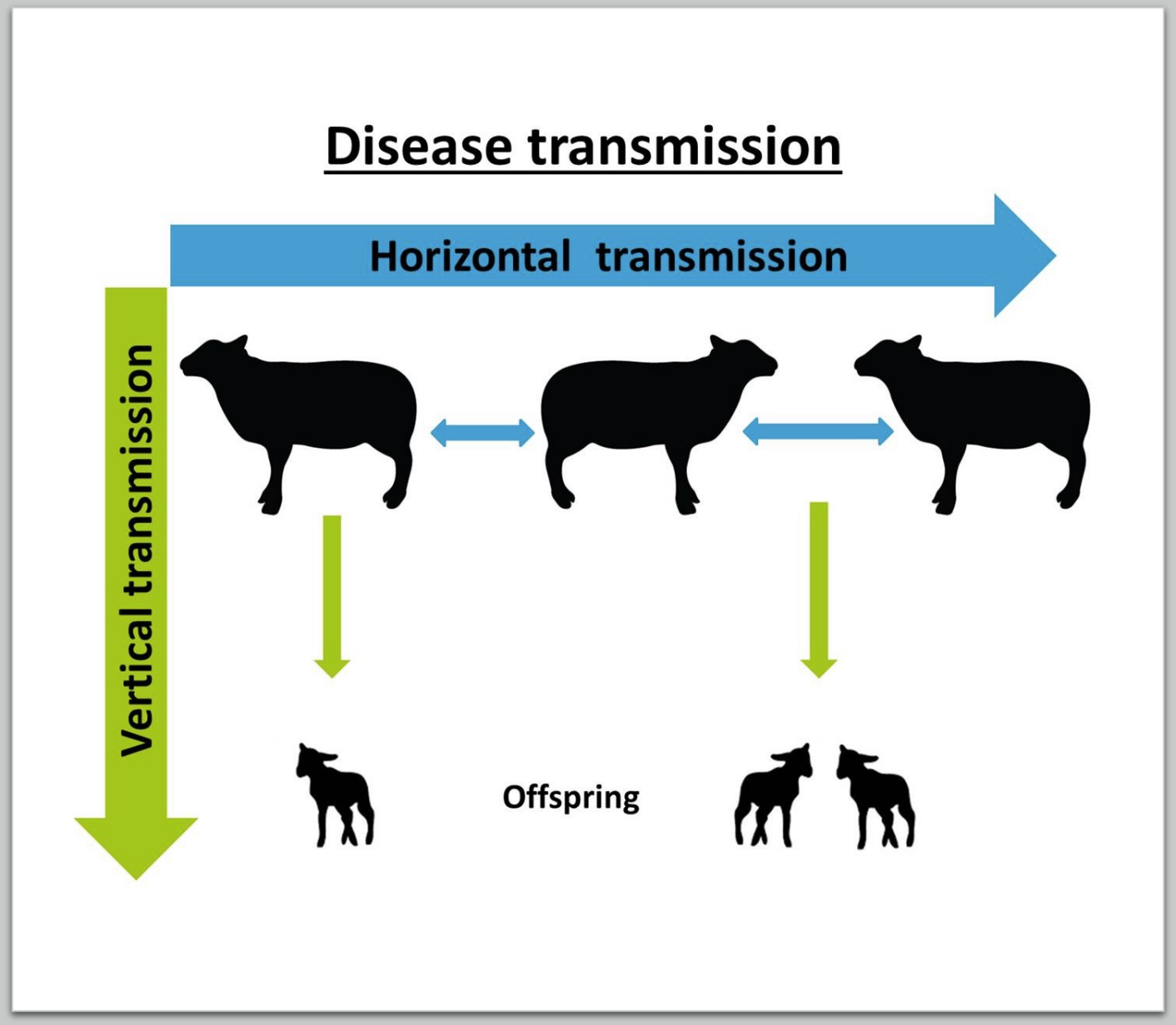
Transmission

Direct and Indirect.

Tear, Nasal Drain, Feces, Urine, Uterine Flow, Amniotic Fluid, Plesenta and Semen contain virus.

Persistent animals.

- Vertically transmitted infection is when disease is transmitted from one generation to another and can be either *in utero* via the placenta, or lactogenically, via the mother's milk.
- Horizontal transmission is disease transmission from one animal to another.



Pathogenesis and Clinical Signs

- Non-Pregnant ewes:
- Infection could be subclinical
- Fever, short-period lymphopenia and viremia are seen.
- Depression, diarrhea.

Infection in pregnant ewes:

- Ewes show no clinical signs.
- The virus spreads on the placenta.
- Infection causes abortion, weak lamb births.
- Although the immune system of the ewes eliminates all virus from the tissues in a short period of time, the virus remains in the fetus persistently.

Fetal Infection

- The most dangerous time for the fetus is to get infected in the first 80 days of the pregnancy (before immun system develops)
- The reasons of the persistent infections;

1-The placenta of the ewes does not allow to pass through the antibodies to the fetus.

2-Since the immunity system of the fetus does't develop in this period, the immune response does not occur.

3- Depending on the infection period, pathological lesions occur.

- Classical outcome of *in utero* is the 'hairy shaker' lamb.,
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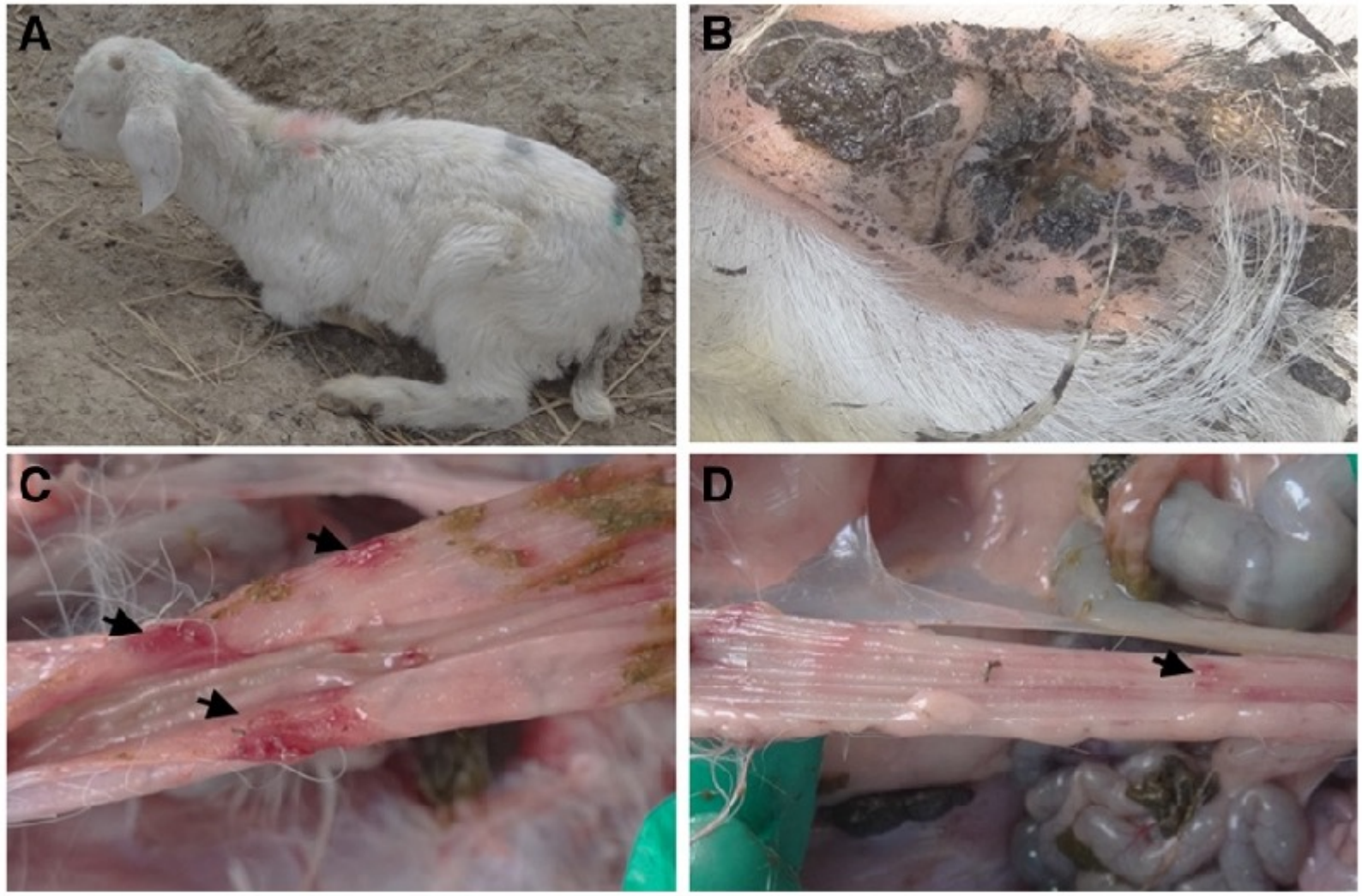
- Tropism of the virus and the other pestiviruses are for foetal lymphoid, skin and CNS tissues.
- 'Hairy shaker' lambs have hair rather than wool coats and CNS lesions often with hypomyelinogenesis and hypocerebellum. (AH SYNDROME)

- Weak lambs naturally infected with Border disase virus. Affected lambs showed: (a) growth retardation. (b) ocular and nervous signs. (c) nervous signs and (d) locomotor disturbances.



Clinical and pathological observations of diseased goats. A. diseased goat showed depression, rough hair-coat and growth retardation; B. goat with diarrhea. The anus and neighboring fur were covered with loose stool; C and D. hemorrhage and necrosis in small and large intestine (black arrows)

Published in Virology Journal 2012 Detection of border disease virus (BDV) in goat herds suffering diarrhea in eastern ChinaWenliang Li, Long Mao, Yongqian Zhao, Yinhua Sun, Kongwang He, Jieyuan Jiang

Diagnosis

- Detection of Ab by ELISA
- Detection of Ag by ELISA
- Neutralization
- Virus by virus isolation
- PCR
- IF, IP for Non-CPE virus

Prevention and Control

- Imported animals must be checked
- Slaughter is recommended in sporadic cases.
- Persistently infected animals in endemic cases must be eliminated
- 2 months before breeding, all animals should be serologically controlled.
  - 21 days after the first blood sample, blood is taken again to check whether the infection is persistent or acute.
  - If the second blood sample is virus (+) and Ab (-) that means persistent infection.
  - If virus (-) Ab (+) means Acute infection.
- There are vaccines in the USA and in Europe. Control can only be by careful screening of sheep to be introduced into clean flocks or by the screening of suspected clinical cases.