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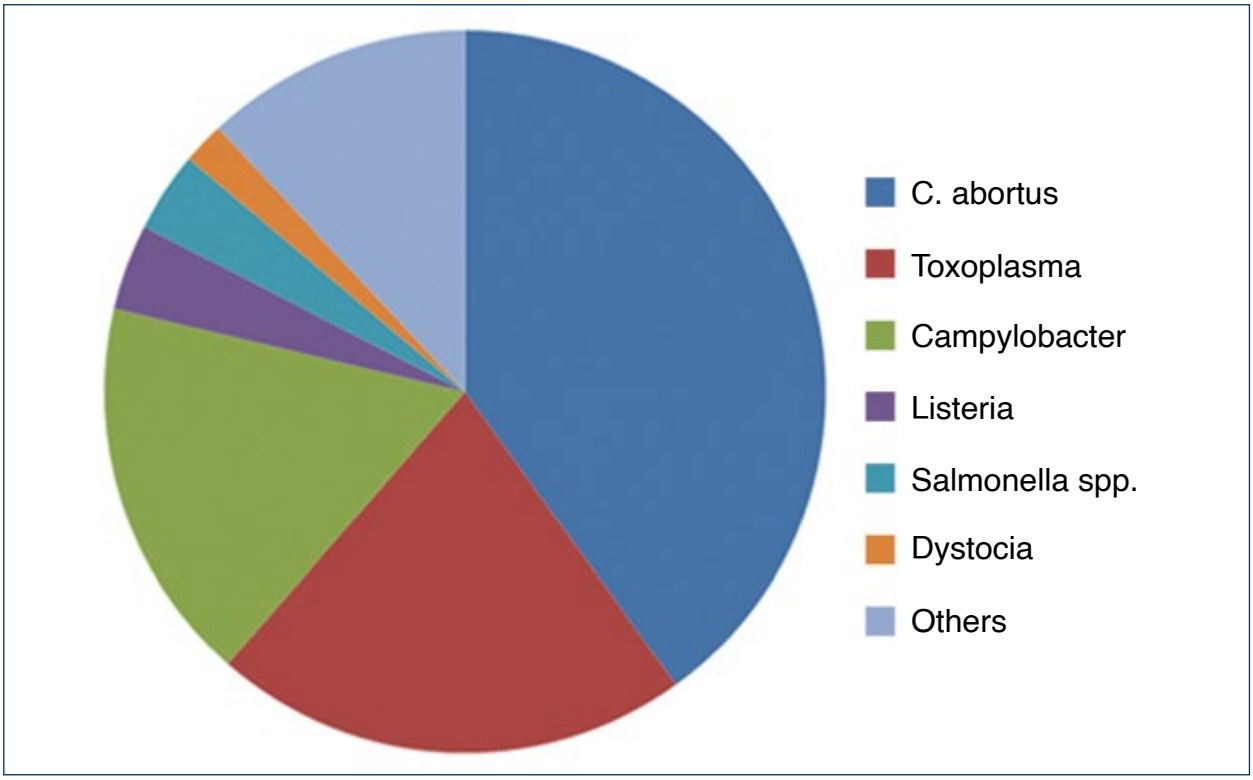
'The Quality Clinical Pathology Service'

Ovine/ Caprine Abortion Sampling Protocol

Abortion in sheep flocks and goat herds can be a significant cause of financial loss and welfare problems on affected farms. The following pie chart gives an overview of the relative importance of the main pathogens associated with ovine abortion based upon APHA VIDA data for 2018-2020.



When presented with this problem on farm or in the surgery a definitive diagnosis should always be sought as there are various management procedures including vaccination which can significantly reduce morbidity. The majority of causes of ovine abortion can be diagnosed following the collection of a small number of samples. The most important factor in establishing a diagnosis is taking samples from the right material – freshly aborted lambs and placentae. Try and avoid severely autolysed lambs and placentae as any bacterial cultures may become overgrown by post-mortem invading organisms. It is also worthwhile considering collection from a number of aborted lambs as organisms such as *Campylobacter* species can be difficult to isolate.

Make an assessment of the material you are presented with. Is there any mummification? Is the fleece matted with grey/yellow exudate? Are the lambs dysmature? Is there evidence of deformity (e.g. arthrogryposis or hydrocephalus)?

Examine the placenta looking for evidence of changes such as inter-cotyledonary thickening (as in Enzootic Abortion of Ewes (EAE) - figure 1), necrosis or small white foci in the cotyledons (Toxoplasmosis – best appreciated by gently agitating the cotyledon

in clean water). Remove a cotyledon with surrounding membrane as shown in figure 2 and place in a sterile container. If no placenta is available and you suspect EAE then making an impression smear of the fleece or tongue, or taking a swab of the ear canal and rolling along a slide to air dry can often provide a diagnosis although this is less reliable than placental examination. Foetal stomach contents are less consistent than other material for EAE testing purposes.

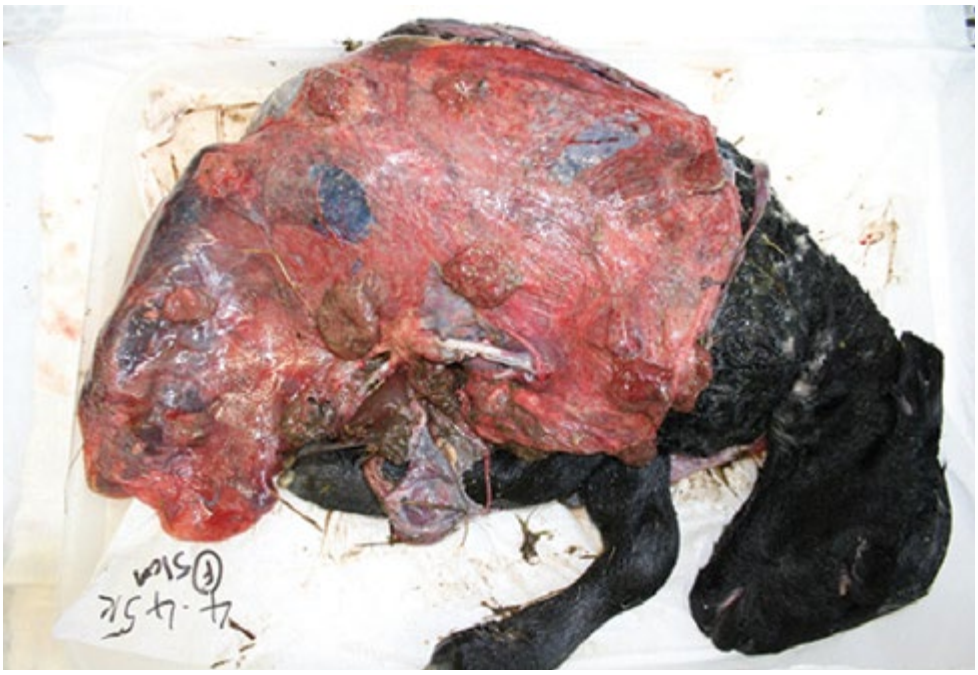


Figure 1.
Relatively fresh lamb with mild autolysis covered in placenta.

Figure 2.
Remove a cotyledon and part of surrounding membrane. Place in a sterile container. This case shows classic changes of EAE with inter-cotyledonary thickening and exudate on the surface.

Laying the lamb in lateral recumbency (figure 3) reflect both the fore and hind leg and open the abdomen and thoracic cavity by starting an incision at the pubis cutting cranially through the ventral abdominal wall and costochondral junctions. Reflect the thoracic wall dorsally by snapping the ribs at the costo-vertebral end. This exposes the whole of the abdominal and thoracic viscera (figure 4).

Collect foetal fluids (heart blood or fluid in body cavities) using either a vacutainer and needle or sterile syringe (placing the fluid in a suitable leak proof container)(figure 5).

Collect cranial brain stem and place in a sterile container.

Collect foetal stomach contents in a similar fashion (figure 6).

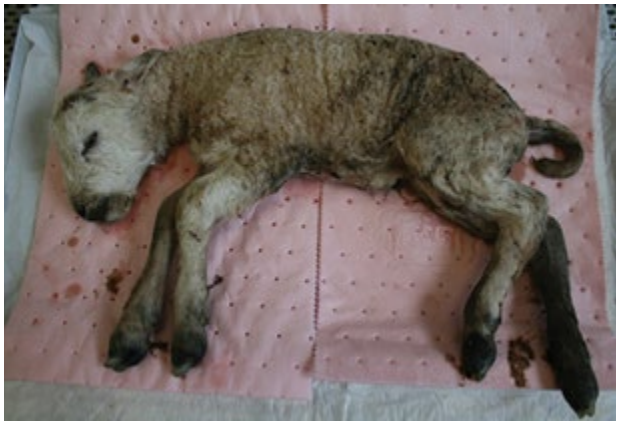


Figure 3. Aborted lamb in lateral recumbency

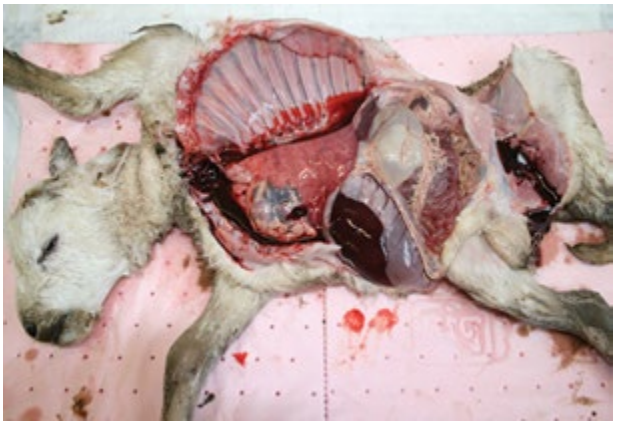


Figure 4. Fore and Hind limbs reflected, abdominal and thoracic cavities opened exposing viscera.

Placenta, foetal fluids, cranial brain stem and foetal stomach contents will often yield a diagnosis of the common causes of abortion. Maternal serology, in the absence of vaccination, can be useful in indicating exposure to EAE and Toxoplasmosis but are not diagnostic in their own right and must be interpreted in light of other findings.

Border disease (BDV) and congenital Schmallenberg viral (SBV) infection can result in the birth of abnormal lambs – 'Hairy shaker' in BDV and arthrogryposis/hydranencephaly in SBV with BDV also associated with reproductive failure and abortion. The clinical presentation is very suspicious of infection but should you require confirmation a number of options are available. From affected lambs post-mortem collection of the brain and spinal cord for histopathology will define the underlying pathology (refer to the Nervous Disease information sheet for removal techniques).

Viral nucleic acid (DNA/RNA) can be detected in spleen or thymus by PCR for BDV and in brain tissue for SBV. The collection of serum from live lambs or foetal fluids from foetuses for antibody tests should also be undertaken to help provide a more definitive diagnosis. Tests for both antigen and antibody should be run as lambs will show differing responses to infection dependant upon the stage of in-utero exposure. Interpretation of maternal serology for both viral infections can be difficult unless the previous status of the dams is known – antibody can persist for variable times and if there is repeated exposure high levels may be induced.

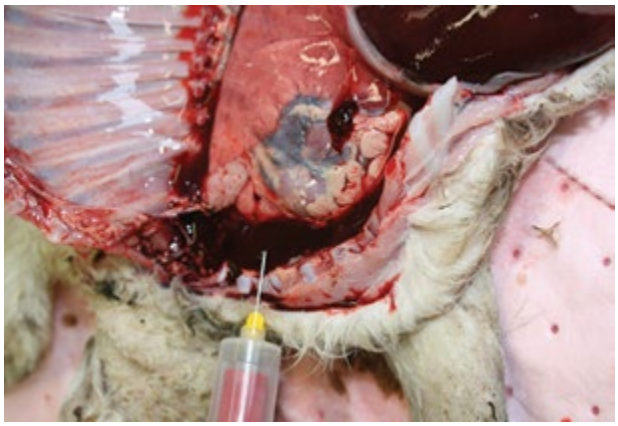


Figure 5. Collection of foetal fluids with a vacutainer and needle.

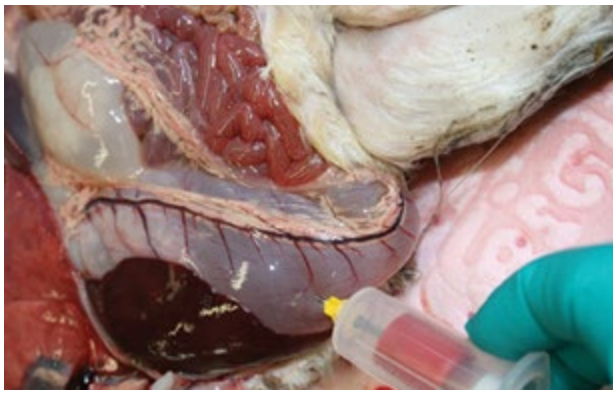


Figure 6. Collection of foetal stomach contents with a vacutainer and needle, (if very tenacious consider opening the abomasum with a sterile scalpel and use a syringe to withdraw the contents).

Summary of Samples

- **Fresh placenta**
- **Foetal stomach contents**
- **Foetal fluids**
- **Spleen or thymus (BDV) - fresh**
- **Cranial brainstem (Toxoplasma) - fresh**
- **Caudal brainstem (SBV) – fresh**
- **Fixed brain and spinal cord (BDV SBV)**

Ovine Abortion Sampling Protocol

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