JVDI in Focus

Our April focus is an article in JVDI's upcoming May issue: "Bovine coronavirus in the lower respiratory tract of cattle with respiratory disease" by Michael C. Rahe, Drew R. Magstadt, Jennifer Groeltz-Thrush, Phillip C. Gauger, Jianqiang Zhang, Kent J. Schwartz, Christopher L. Siepker.

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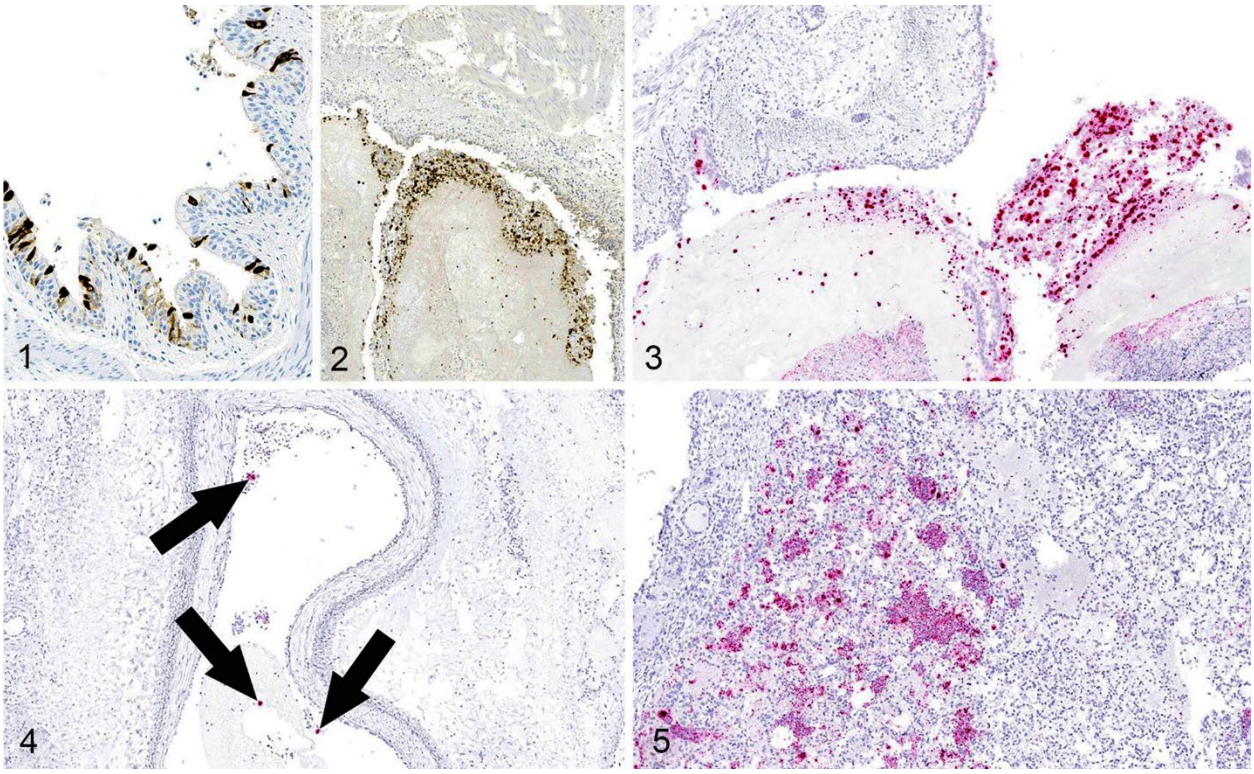
Abstract. Bovine coronavirus (BCoV) is a known cause of enteric disease in cattle; however, its role in bovine respiratory disease (BRD) is poorly understood, with a dearth of evidence of the detection of the virus in respiratory tract lesions. We coupled histologic evaluation of tracheal and lower airway tissues from 104 calves with BRD in which BCoV was detected in the lungs via PCR followed by direct detection of BCoV by immunohistochemistry and an RNA in situ hybridization assay (ISH; RNAscope technology). RNAscope ISH detected BCoV in respiratory epithelium in more cases than did IHC. Using both methods of direct detection, tracheal epithelial attenuation and identification of the virus within lesions were observed commonly. Our results confirm a role of BCoV in respiratory tract infection and pathology, and show that the virus likely plays a role in the development of BRD.



Figures 1–5. Bovine coronavirus (BCoV) in the lung of cattle with respiratory disease. **Figure 1.** Multifocal, intracytoplasmic immunolabeling within bronchial epithelium. Immunohistochemistry (IHC). **Figures 2,**

3. Detection of BCoV by IHC (Fig. 2) and in situ hybridization (ISH; Fig. 3) in sloughed epithelium within the lumens of bronchi. **Figure 4.** Intraluminal detection of BCoV nucleic acid (arrows) within cells in an artery. ISH. **Figure 5.** Strong ISH labeling of intra-alveolar cellular debris.

JVDI News

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