

Large Domestic Animal Paper - Sample Short Answer Question

In early October approximately 20% of a group of 230 17–20-month-old cattle that had been assembled in a feedlot over the previous three weeks develop dullness, reduced appetite, coughing and bilateral mucopurulent oculonasal discharges. Infectious bovine rhinotracheitis (IBR) was diagnosed based on PCR from a nasopharyngeal swab.

- a) The DNA of what aetiological agent confirmed the diagnosis of IBR? (1 mark)

Bovine alphaherpesvirus 1 (BoAHV1) (1).

- b) What is the most likely source of infection? (2 marks)

Shedding of virus by stressed (1) latently infected animals (1) within the group.

- c) How is this pathogen transmitted? (2 marks)

Transmission by aerosol: direct contact (1) with nasal, ocular, or vaginal secretions; or indirect contact (1) with fomites, semen, feed, or water.

- d) List two possible grossly visible lesions in the upper respiratory tract and two in the lower respiratory tract? (4 marks)

Upper - Varying degrees of ulceration of nasal, laryngeal, and tracheal mucosae (1) covered by a fibrinonecrotic membrane (1). Lower - Pneumonia (1) with bronchitis (1)

- e) What are the microscopically visible lesions? (4 marks)

Erosion or ulceration of nasal/tracheal mucosa, with necrosis and exfoliation of epithelial cells (1) and surface exudation-precipitation of admixed neutrophils and fibrin (1). Eosinophilic intranuclear IBs rarely present (1) - possibly in nasal epithelium. Perivascular lymphocytes in trigeminal ganglion and brainstem (1).

- f) Outline two ways this pathogen restricts the host response? (2 marks)

Accept any two of the following:

- 1. destruction of mucociliary escalator (1)*
- 2. impairment of alveolar macrophage function - to phagocytose bacteria and attract neutrophils (1)*
- 3. gC glycoprotein binds C3 preventing complement activation (1)*
- 4. gI and gE are Fc receptors for immunoglobulin and impair ab-mediated virus neutralisation (1)*

- g) What process leads to latent infection in animals that recover from the disease? (2 marks)

Virus spreads axonally from infected epithelia to latently infect trigeminal or other sensory ganglia (2)

- h) List four other clinical syndromes that result from infection of cattle with this pathogen? (4 marks)

Accept any four of the following:

1. *pustular vulvovaginitis*
2. *balanoposthitis*
3. *abortion*
4. *encephalitis*
5. *systemic herpesviral infection in young (<2 mths) calves*
6. *viral pneumonia in young calves (without necessarily upper resp tract involvement)*