Cerberus Adelaide
Unit 3 49 Holland Street
Thebarton SA 5031
Telephone: +61 8 8234 8780
Facsimile: +61 8 8234 8712
Email: cerberus@cerberus.net.au

Cerberus Melbourne
Unit 2 7-11 Rocco Drive
Scoresby VIC 3179
Telephone: +61 3 9763 8290
Facsimile: +61 3 9763 8290
Email: cerberus@cerberus.net.au

Ectromelia virus (Mousepox)

Family: Poxviridae Genus: Orthopox

Prevalence

- Rare in laboratory mice, common in wild mice
- Common in research laboratories that exchange live mice, mouse tissues, sera, and transplantable mouse tumours

Significance

- Low in mice research
- High in laboratories that exchange biologic material for mice research
- Not highly contagious
- In susceptible strains, high mortalities will affect research
- ECT may modify phagocytic cell behaviour in resistant strains
- Murine biological products may be infected resulting in spread of the infection

Disease

- DNA virus also known as Mousepox
- In susceptible strains, high mortality with or without clinical signs
- At necropsy there is liver and lymphoid tissue necrosis
- In animals which do not succumb to peracute death the clinical signs are ruffled fur, hunched posture, oedema of face and legs, conjunctivitis, cutaneous pustules, ulceration of muzzle, ears, limbs, tails and partial amputation of limbs and tail

Transmission

- Direct contact or fomites:
    - Usually dependent on natural transmission
- Cutaneous abrasion provides the main route of entry
- Natural infection occurs through the faecal-oral route, direct contact, and urine

Isolation and Diagnosis

- Clinical signs, preferred testing via serology ELISA (false positive if experimental design involves dosing vaccinia virus)
    - Immunofluorescence Assay (IFA) Confirmation
- Histology (intracytoplasmic inclusion bodies)
- PCR on skin lesions and spleen

Strains

- Resistant strains include C57Bl/6, C57BL/10 and AKR (carrier status can exist in these strains)
- Susceptible strains include A, CBA, C3H, BALB/c, DBA/2

Screening

Routine monitoring is essential of animals and murine0-derived biological products.

Duration

- Lesions appear 7-10 days post infection, virus is shed for 3 weeks
- Infected animals shed virus around 10days after infection when skin lesion appear

Durability

- Virus may exist in skin lesions for 3-4 months post infection
- ECT is stable for extended periods at room temperature and dry conditions:
    - ECT in blood can survive for 11days room temperature
- Preserved for months at room temperature in glycerol and indefinitely at -70^{o}C or freeze dried

Prevention and Control

- Pathogen exclusion:
    - Regular monitoring of mice and murine-derived biological products
    - Rederivation by hysterectomy or embryo transfer is the gold standard for disease eradication
- Disinfections recommended include sodium hypochlorite, iodophors, and vapor-phase formaldehyde
- Routine health monitoring of colonies and regular cleaning of animal house

Reading

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