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ESTABLISHMENT OF AN EV71 TYPE HAND-FOOT-MOUTH DISEASE ANIMAL MODEL USING C57 SUCKLING MICE

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Hand-foot-and-mouth disease is a common acute intestinal infectious disease in children, and some children may be accompanied by serious complications such as damage to the central nervous system. Enterovirus 71 is the main pathogen of HFMD. The construction of animal model of EV71 hand, foot and mouth disease (HFMD) is of great significance for studying the mechanism of EV71 virus infection induced severe disease. In this study, an EV71-infected animal model was constructed using clinically isolated EV71 virus and C57 suckling mouse models. The complications such as encephalitis and pulmonary edema were induced in mice and the pathological changes of tissues and organs of mice infected with EV71 virus were detected. The results showed that mice in the infected group began to show reduced activity and become apathetic after three days. Subsequently, the symptoms gradually worsened symptoms such as hindlimbs occurred, and some mice died; Hematoxylin and eosin (HE) staining revealed that severe damage and inflammatory cell infiltration occurred in multiple organs of mice at the late stage of infection; immunohistochemical staining was shown in the brain and a large number of EV71 virus antigens were present in skeletal muscles. Neurons nucleus shrinkage and cytoplasm vacuolation were observed under transmission electron microscope. Luxol fast blue (LFB) staining revealed that the brain tissue and the spinal cord were found to have obvious structural damage and the number of neurons was significantly reduced. Masson staining showed mucus in the lung; the expression levels of interleukin 6 (IL-6) and inducible nitric oxide synthase (iNOS) in brain tissue, spinal cord tissue, and muscle tissue were increased after immunofluorescence staining. The use of clinically isolated EV71 virus to infect 1-day-old C57 mice is feasible, and can successfully simulate central nervous system damage and pulmonary edema; EV71 virus has neurodegenerative and musculoskeletal, and can cause nerve cells and muscle cells. Destruction; elevated IL-6 and iNOS levels are associated with EV71 infection.

Recent Publications

1. **Jin Y, Zhang C, Zhang R, Ren J, Chen S, Sui M, Zhou G, et al. (2017) Pulmonary edema following central nervous system lesions induced by a non- mouse-adapted EV71 strain in neonatal BALB/c mice. Virology Journal 14: 243.**
2. **Dang D, Zhang C, Zhang R, Wu W, Ren J, Zhang P, Zhou G, et al. (2017) Involvement of inducible nitric oxide synthase and mitochondrial dysfunction in the pathogenesis of enterovirus 71 infection. Oncotarget 8: 81014-81026.**

Biography

Zhou Having has extensive clinical experience in the diagnosis and treatment of pediatric diseases. In addition, he is mainly engaged in the study of the pathogenesis of hand-foot-mouth disease during his Master's degree studies. He is skilled in applying epidemiological knowledge to solve clinical problems and has professional insights in the construction of animal models. He found that elevated levels of interleukin 6 (IL-6) and inducible nitric oxide synthase (iNOS) are associated with EV71 infection.

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