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Sertoli cells are susceptible to ZIKV infection in mouse testis

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Recently, Zika virus (ZIKV) causes millions of infections which emerge as a new dangerous member of the genus of Flavivirus. Unlike other well-known flaviviruses, ZIKV can be transmitted sexually and infect testes in murine models. However, the exact susceptible cells are not entirely clear. To investigate these issues, we infected interferon α/β and γ receptors deficient AG6 mice with ZIKV and examined the outcomes of infection. Infected mice displayed signs of reproductive system disorder, altered androgen levels in serum, and high viral load in semen and testes. Seminiferous tubules showed atrophy, accompanied by positive staining of ZIKV antigens on Sertoli cells. Viral particles and vacuole changes were observed within Sertoli cells, whose susceptibility to ZIKV was further validated *in vitro* study using cell lines. The disruption of tight junctions within testis and altered sperm morphology were also observed in ZIKV infected mice. Our results therefore demonstrated that Sertoli cells are susceptible to ZIKV infection, which results in the disruption of tight junctions in testis and causes abnormal spermatogenesis in mice. These results also imply that long-term impact of ZIKV infection on human male reproductive system requires close monitoring..

Recent Publications

1. Zi Yang Sheng, Na Gao, Zhao Yang Wang, Xiao Yun Cui, De Shan Zhou, Dong Ying Fan, Hui Chen, Pei Gang Wang and Jing An (2017) Sertoli cells are susceptible to ZIKV infection in mouse testis. Frontiers in Cellular and Infection Microbiology 7:272.
2. Zhao Yang Wang, Zai Wang, Zi Da Zhen, Kai Hao Feng, Jing Guo, Na Gao, Dong Ying Fan, Dai Shu Han, Pei Gang Wang and Jing An (2017) AXL is not an indispensable factor for Zika virus infection in mice. Journal of General Virology 98(8):2061-8.
3. Xin Wang, Yisong Wang, Dong Liu, Peigang Wang, Dongying Fan, Yuguang Guan, Tianfu Li, Guoming Luan and Jing An (2017) Elevated expression of EBV and TLRs in the brain is associated with Rasmussen's encephalitis. Virologica Sinica 32(5):423-430.
4. Xiaoyan Zheng, Hui Chen, Ran Wang, Dongying Fan, Kaihao Feng, Na Gao and Jing An (2017) Effective protection induced by a monovalent DNA vaccine against dengue virus (DV) serotype 1 and a bivalent DNA vaccine against DV1 and DV2 in mice. Frontiers in Cellular and Infection Microbiology 7:175.
5. Yanhua Wu, Xiaoyun Cui, Na Wu, Rui Song, Wei Yang, Wei Zhang, Dongying Fan, Zhihai Chen and Jing An (2017) A unique case of human Zika virus infection in association with severe liver injury and coagulation disorders. Scientific Reports 7(1):11393.

Biography

Jing An graduated from Chinese Medical University in 1982 in Shenyang of China. She got her Master's degree and PhD in Clinical Medicine in 1989 at the Third Military Medical University in Chongqing (China), followed by a Postdoctoral position and Research Fellow position at the Department of Microbiology and Immunology in Tokyo (Japan) at the Metropolitan Institute for Neuroscience. In autumn 2000, she returned to China and occupies since the position of a Principal Investigator and Head of the Department of Microbiology at the Capital Medical University of Beijing (China). Her research focuses on the interaction between mosquito-borne flaviviruses and host as well as prevention of dengue virus infection.

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