OMICS Group Conferences
Accelerating Scientific Discovery

3rd International Conference on
Vaccines & Vaccination
July 29-31, 2013 Embassy Suites Las Vegas, NV, USA

Ag85A/ESAT-6 chimeric DNA vaccine caused hypersensitivity response in mice

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We studied the effects of Ag85A/ESAT-6 DNA vaccine alone or in combination with anti-TB drugs for the treatment of mouse TB model. In the first experiment, the mice infected with MDR isolate HB361 were variously treated with plasmid pVAX1, RFP, PZA, Ag85A DNA, Ag85A/ESAT-6 DNA, or Ag85A/ESAT-6 DNA combined with either RFP or PZA. In the second experiment, the mice infected with M. tuberculosis H37Rv were treated with saline, plasmid pVAX1, M. vaccae vaccine, Ag85A DNA, or Ag85A/ESAT-6 DNA plus Ag85A/ESAT-6 protein boost. The mice in Ag85A DNA group all survived in the two experiments, but in the first experiment all ten mice were dead at 1 to 2 days after the fifth immunization with Ag85A/ESAT-6 DNA. In the second experiment 13 of 16 mice were dead at 2 days after the booster immunization with Ag85A/ESAT-6 protein. Only 2 of 10 mice were dead at 29 days after the fifth treatment using Ag85A/ESAT-6 DNA combined with RFP in the MDR-TB model, and the live mice had reduced the pulmonary and splenic bacterial loads by 0.88 and 0.85 logs respectively compared with the RFP only group. Histopathology showed acute pulmonary edema and vasculitis in lungs of the three surviving mice from Ag85A/ESAT-6 DNA vaccine plus Ag85A/ESAT-6 protein boost group. These data suggest that Ag85A/ESAT-6 DNA did not improve the immunotheraputic effect of Ag85A on TB infection in mice. The over-expression of ESAT-6 protein and multiple immunizations using Ag85A/ESAT-6 DNA apparently caused a hypersensitivity response when used in immunotherapeutic immunization strategies.

Biography

Yan Liang, MD, Ph.D, Associate Professor of Army Tuberculosis Prevention and Control Key Laboratory, the Institute of Tuberculosis Research, the 309th Hospital of Chinese PLA, Beijing 100091, China. She does research on tuberculosis (TB) in the following directions: (1) New TB vaccines; (2) the new, rapid diagnostic techniques of TB.

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