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The molecular basis of protective immunity against experimental intracellular infection caused by *Francisella tularensis*

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Francisella tularensis (F. tularensis) is a highly virulent, intracellular, Category A bioterrorism pathogen that causes a disease called tularemia. An efficient immune response is dependent on T cell-mediated immune responses and IFN-gamma production after F. tularensis LVS (LVS) infection. Nevertheless, there is also evidence that B cells, as well as antibodies, are necessary for mice to develop a resistance against primary and secondary infection by LVS. We utilized gamma-irradiated mice model for studies of the protective role of anti-F. tularensis antibodies in order to partially eliminate cellular responses and also address the responses in immunocompromised host. To verify the appropriate dose of ionizing radiation, the *in vivo* analysis of the cellular response demonstrated the strong cell response of CD3+ and CD19+ cells on murine model during early stages after gamma irradiation. In parallel the monocyte-derived CD123+ cells, F4/80+ dendritic cells and NK1+ cells showed the adequate response to radiation. We also clarified the level of IL-beta, IL-4, IL-6, TNF-alpha and IFN-gamma serum and organ levels. Moreover, the imunoproteomic analysis of LVS immunoreactive proteins was exploited using newly prepared serum for partial comparative evaluation of the results. In summary, we demonstrated that B cell-mediated effector responses together with parallel induction of T cell-mediated immunity both play an important role and this should be taken into an account as a powerful strategy in the design of new vaccines. Moreover, we clearly demonstrated the first evidence of combination of successful passive transfer of specific antisera and subsequent active immunization of immunocompromised hosts.

Biography

Klara Kubelkova has completed her PhD at the age of 26 years from University of Defence (UoD), Faculty of Military Health Sciences (FoMHS). She is a member of radiological-nuclear group of Center of Advanced Studies, FoMHS, UoD. She is a member of Academic Senate of Faculty of Military Health Sciences from 2013, co-investigator of many scientific grants supported by Czech Ministry of Defense and Czech Science Foundation and is supervisor of undergraduate students. She has published many scientific papers and book chapters in reputed journals.

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