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Titel des Beitrags: Immune requirements of post-exposure immunization with modified vaccinia Ankara of lethally infected mice.

Abstract: Current prophylactic vaccines work via the induction of B and T cell mediated memory that effectively control further replication of the pathogen after entry. In the case of therapeutic or post-exposure vaccinations the situation is far more complex, because the pathogen has time to establish itself in the host, start producing immune-inhibitory molecules and spread into distant organs. So far it is unclear which immune parameters have to be activated in order to thwart an existing lethal infection. Using the mousepox model, we investigated the immunological mechanisms responsible for a successful post-exposure immunization with modified vaccinia Ankara (MVA). In contrast to intranasal application of MVA, we found that intravenous immunization fully protected mice infected with ectromelia virus (ECTV) when applied three days after infection. Intravenous MVA immunization induced strong innate and adaptive immune responses in lethally infected mice. By using various gene-targeted and transgenic mouse strains we show that NK cells, CD4 T cells, CD8 T cells and antibodies are essential for the clearance of ECTV after post-exposure immunization. Post-exposure immunization with MVA is an effective measure in a murine model of human smallpox. MVA activates innate and adaptive immune parameters and only a combination
thereof is able to purge ECTV from its host. These data not only provide a basis for therapeutic vaccinations in the case of the deliberate release of pathogenic poxviruses but possibly also for the treatment of chronic infections and cancer.

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