Poster

Newcastle Disease Virus mediates tumor rejection by activation of NK cells but the adaptive immune response prevents relapse in a murine model of pancreatic cancer

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Background: Pancreatic cancer is projected to be the 2nd cause of cancer-related deaths worldwide by 2030 and has the worst prognosis of all solid malignancies. In 1957 it was first reported that Newcastle Disease Virus (NDV) has oncolytic properties on tumor cells.
Methods: A single dose of NDV was administered intravenously seven days after orthotopic tumor inoculation of DT6606PDA or Panc02 cells in mice. Tumor growth was measured and immune response was analyzed using flow cytometry. Staining of frozen tumor sections revealed infiltration of leukocytes. Western Blot analysis determined expression of PLC proteins on tumor cells.
Results: A single treatment with NDV inhibited DT6606PDA tumor growth in mice and prevented tumor recurrence for a period of three months. Tumor infiltration and activation of NK cells, cytotoxic and helper T-cells was enhanced. NDV induced melting of Panc02 tumors till d7 pi but recurred henceforth displaying unrestricted tumor growth and active inhibition of tumor-specific immune response. Re-isolated Panc02 cells showed enhanced expression of FoxP3 and TGF-β but neither expression of MHC I nor Rae-1δ.
Conclusion: NDV is able to reject tumors displaying high immunogenicity and moderate proliferation (DT6606PDA) by mounting an anti-tumor immune response but if non-immunogenic variants accomplish outgrowth (Panc02) anti-tumor response is prevented and relapse occurs. This study underpins the importance of an adaptive immune response which can be initiated by NDV to mediate long-term tumor surveillance apart from direct oncolysis.

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