Measles virus vaccine infects tumor cells and induces dendritic cells (DC) maturation and tumor antigen cross-presentation

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Dendritic Cells (DC) are antigen presenting cells specialized in inducing immune responses. Measles Virus vaccine (MV) was recently proposed as anti-tumor agent to target and kill specifically tumor cells, without infecting healthy cells. We demonstrated that myeloid dendritic cells (mDC) co-cultured with MV infected tumor cells, actively matured and cross-presented tumor antigen. Recently, we also investigated the effects of MV tumor infected cells on phenotype and functions of plasmacytoid DC. We studied maturation, cytokine production and tumor antigen cross-presentation by mDC and pDC exposed either to the virus alone, MV infected or UV irradiated tumor cells. We found that MV infected cells induce DC maturation with a strong cytokine production, notably IFN-α, whereas UV irradiated tumor cells and the MV alone did not. We also observed that MV infected and UV irradiated cells were similarly phagocytosed by DC, although this uptake was less important than in myeloid DC. Interestingly, we observed cross-presentation of tumor antigen to a specific CD8+ T cell clone only when DC are co-cultured with MV infected tumor cells. Altogether, our results suggest that the use of MV, as anti-tumor virotherapy, may induce immunogenic tumor cell death allowing DC to cross-present tumor antigen. Data will be presented with effects on mesothelioma, melanoma and lung cancer.