

Dissemination of Newcastle disease virus (NDV-AF2240) in liver during intratumoral injection of xenotransplant breast cancer in BALB/c mice.

ABSTRACT

Objective: Newcastle disease virus (NDV) or avian paramyxovirus type1 possesses several unique properties that make it an excellent anticancer agent. The hemagglutinin neuraminidase (HN) protein of NDV plays an important role in viral infection. The purpose of the present study is to investigate the dissemination of Newcastle disease virus (NDV) AF2240 strain in the liver during intratumoral injection in 4T1 breast cancer in female BALB/c mice. Materials and Methods: A total of 200 female BALB/c mice were divided randomly into 10 cancerous groups consisting of 20 mice per group. The mice were initially induced with 10⁴ 4T1 cells, NDV-AF2240 and tamoxifen co-culture. Cancerous groups were divided into: cancer control (CC), cancer treated with 0.5 µg/ml tamoxifen citrate (CT), cancer treated with 8, 16, 32 and 64HA units of NDV-AF2240 (respectively named C/NDV8, C/NDV16, C/NDV32, C/NDV64), cancer treated with 8, 16, 32 and 64HA units of NDV-AF2240 and tamoxifen (respectively as CT/NDV8, CT/NDV16, CT/NDV32 and CT/NDV64 daily for four weeks). In situ reverse transcription polymerase chain reaction (In situ RT-PCR), negative staining electron microscopy (NSEM), polyclonal chicken antibody and goat anti-chicken antibody conjugated with fluorescein isothiocyanate (FITC) using confocal laser scanning microscopy (CLSM) were used to detect the virus in the tumor and liver. Results: In situ RT-PCR, NSEM and CLSM successfully detected NDV-AF2240 in tumor cells and liver. Conclusion: The findings showed NDV-AF2240 disseminated into liver during intratumoral injection.

Keyword: Breast cancer; Newcastle disease virus; Reverse transcriptase polymerase chain reaction; Confocal laser scanning microscopy; Negative staining.