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Immune Modulating Oncoltyic Virus :Neutrophil-directed T cell therapy

Abstract:

Over the past decade, oncolytic viruses (OVs) have been developed as a promising treatment alone or in combination in immuno-oncology but have faced challenges in late-stage clinical trials. Our retrospective reanalysis of vaccinia oncolytic virus (VOV) clinical trials indicates that lower doses—rather than the maximum tolerated dose (MTD)—are associated with better tumor response rates. Patients who responded well to lower doses generally had prolonged survival rates in the early phase clinical trial. The association between poor outcomes and an increase in OV-induced neutrophils (OV-N) but not baseline neutrophil counts suggests the need for a comprehensive characterization of OV-N. Although this reanalysis is limited by patient heterogeneity—including differences in cancer type and stage, treatment schedules, and administration routes—it remains informative given the complexities of translational studies in the tumor-bearing mouse models of vaccinia oncolytic viruses. Notably, while OV-N increases with higher viral doses, the immune state shaped by tumor progression likely amplifies this tendency.

We would present some potential underlying mechanisms by which neutrophil plasticity is involved in OVN production under cancer progression immunity."

These findings highlight the importance and strategy of OV-N immune modulation as well as dose optimization for the successful clinical development of VOV.

Keywords: Oncolytic virus, Immuno Oncology, T cell modulation, Neutrophil plasticity

Biography :

Professor Taeho Hwang is a faculty member at Pusan National University School of Medicine and a renowned immunologist. He has played a pivotal role in early-phase clinical studies of the Vaccinia Oncolytic Virus and has conducted reverse translational research based on in-depth immune analyses of preclinical and clinical studies over the past 23 years.

He is a co-founder of Bionox Inc. (S. Korea) and recently got US FDA Phase 1 clinical trial of immune-modulating oncolytic virus. His current research in Bionoxx and PNU focuses on T cell modulation through the regulation of neutrophil plasticity, with related studies underway in preparation for clinical application.

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