Tolerability and Activity of Anchored Canine Interleukin-12 (cANK-101) in Pet Dogs with Advanced Malignant Melanoma

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Introduction: Intratumoral immunotherapies (IT-IT) are provocative treatment strategies for solid tumors through induction of local and abscopal immune activities. To advance novel IT-IT, we have developed an anchored immunotherapy platform whereby canine interleukin-12 is stably linked to aluminum hydroxide (cANK-101), which forms a functional depot of interleukin-12 expected to increase therapeutic responses with limited systemic toxicity. Herein, we report the preliminary results of cANK-101 in dogs with advanced malignant melanoma (MM).

Methods: To determine the safety and tolerability of cANK-101 in dogs with advanced MM, a 3+3 dose-escalation design was used. Intratumoral cANK-101 was given every three weeks for 4 cycles, and optionally for a second course of 4 cycles based upon response. Dogs were monitored for adverse events via VCOG-CTCAE and clinical responses were measured using RECISTv1.1. Correlative endpoints included PK, immunogenicity analysis, circulating cytokines, and immunophenotyping of PBMC and lymph node aspirates. Tumor biopsies were evaluated for TILs by immunohistochemistry and transcriptomic profiling.

Results: Ten dogs have been treated, with four dogs manifesting grade 1 or 2 treatment-related AEs and no DLTs or SAEs have been observed to date. Intratumoral cANK-101 increased serum IFNγ and IL-10, as well as increased in circulating $CD4^+$ T cells. Tumor biopsies demonstrated infiltration with $CD3^+$ T cells and macrophages, and transcriptome favored immune activation.

Conclusion: Thus far, cANK-101 appears to be safe and tolerable in dogs with advanced MM. Data from this trial will help inform human clinical trials and may represent a new therapeutic option for dogs with advanced MM and perhaps other solid tumors.