CELL THERAPY USING NATURAL KILLER CELLS IN PATIENTS WITH HEPATOCELLULAR CARCINOMA

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Abstract text: Introduction: Natural killer (NK) cells exhibit cytotoxic activity against tumor cells without prior sensitization and can exert antibody-dependent cellular cytotoxicity (ADCC). The activity and function of NK cells are controlled by a limited repertoire of activating and inhibitory NK receptors. Therefore, blocking inhibitory receptors such as NKG2A using monoclonal antibodies (mAbs) enhances tumor immunity. In this study, we investigated the safety of anti-NKG2A-pretreated NK cells, to improve ADCC function for the management of Hepatocellular carcinoma (HCC).

Material and Method: We initiated a pilot study of expanded donor haploidentical NK cell infusion after a conditioning regimen. The goals were to assess the safety and feasibility. The patients received fludarabine/cyclophosphamide conditioning, followed by adoptive immunotherapy with IL-2-activated haploidentical NK cells. NK cells were infused on days 0, +5, and +10 post-conditioning regimen at a dose of 7 × 108 cells/injection (3 patients).

Results: The NK cell therapy was well tolerated, with no transient adverse events. All patients were alive and in stable disease at the last follow-up. The median follow-up was 3 months for all patients. Furthermore, there was a relative decrease in both tumor diameter and AFP level in all patients.

Conclusion: This pilot study demonstrated the safety and feasibility of infusing high doses of ex vivo expanded NK cells after conditioning with transient adverse effects and was statistically associated with a relative decrease in both tumor diameter and AFP level in all patients.