O1 AN IN VITRO STUDY FOR THE ACTIVATION OF ANTI-TUMOR CYTOTOXICITY BETWEEN AUTOLOGOUS DENDRITIC CELL ALONE, TUMOR CELL ALONE, AND FUSION OF AUTOLOGOUS DENDRITIC CELL AND TUMOR CELL FROM A GLIOBLASTOMA MULTIFORME SUBJECT

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ABSTRACT

Dendritic cell (DC) is the most potent antigen-presenting cell that is specialized for the induction of T lymphocyte response. It can process both intracellular and extracellular antigens. The abundant expression of MHC class I, class II, costimulatory and adhesion molecules on cell surface provide potent T lymphocyte stimulation. Moreover, it secretes various cytokines that signalize T lymphocyte proliferation. Fusion of dendritic cell and tumor cell is proposed as an alternative method for better tumor antigen presentation. Expressing a variety of tumor associated antigens and dendritic cell-derived costimulatory molecules, the derived fusion cell (FC) retains the functional potency of dendritic cell and capability to stimulate autologous T lymphocyte proliferation. We investigated whether priming with FC provided an advantage over DC alone or tumor cell alone in cytotoxicity against autologous tumor cells. In our study, dendritic cells were generated from peripheral blood mononuclear cells (PBMCs) in the presence of GM-CSF and IL-4. Using polyethylene glycol, DCs and tumor cells were fused to obtain the FCs. The dendritic cells, tumor cells and fusion cells are coincubated with naive T lymphocytes to gain the effector cell populations. Each T effector lymphocyte population is harvested, and then assayed for their cytotoxic activity. Priming with FC generate a frequency of CTL of 1/66667; while priming with DC alone or tumor cell alone generated frequencies of 1/80000 and 1/52273 respectively. The priming with tumor cell alone provided the highest frequency of effector cells. Our subject has been immunized with tumor vaccine for months, so tumor specific memory and cytotoxic T lymphocyte may already circulate in his body. Therefore priming tumor cells alone can generate the highest frequency of CTL because of its richest tumor associated antigen. Our finding provides the information for the efficacy of using the cellular product from this experiment as potential tumor vaccines for clinical trial.