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DETERMINATION OF T LYMPHOCYTE SUBGROUPS IN THE BONE MARROW MICROENVIRONMENT IN MULTIPLE MYELOMA: CAN TUMOR-DIRECTED T-CELLS PLAY A ROLE IN FIGHTING CANCER?

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INTRODUCTION

No marked improvement could be achieved in the treatment of MM despite advances in systematic and supportive therapies in recent years. Over three decades, melphalan plus prednisolone, as standard therapy, have been used in the treatment. Although high response rates have been achieved by using novel agents and autologous stem cell transplantation, the disease remains to be non-curable in long-term.

AIM

The aim of this study was to investigate the distribution of T-lymphocyte subgroups, including T8+, T4, NKT, Th1, Th2, Th17, Treg, and Th22, around the bone marrow tumor in multiple myeloma (MM) patients using flow cytometry. The interactions between the bone marrow microenvironment and plasma cells play a crucial role in the expansion of humoral and liver immunity in MM. Understanding the distribution and role of T lymphocyte subgroups in MM can contribute to the development of new immunotherapy strategies.

METHOD

Twenty MM patients and 10 subjects with normal bone marrow were included in the study. Flow cytometric analysis was performed using superficial and intracellular staining techniques. The ratio and number of CD8+ T lymphocytes, NKT cells, and Th17 cells in the bone marrow were determined by flow cytometry. The distribution of T lymphocytes was compared based on the plasma cell ratios in the bone marrow.

RESULTS

Flow cytometry analysis revealed that T lymphocytes were directed towards the tumor periphery based on the plasma cell density in the bone marrow of MM patients. Different proportions of T lymphocyte subgroups were observed in patients with varying plasma cell ratios.

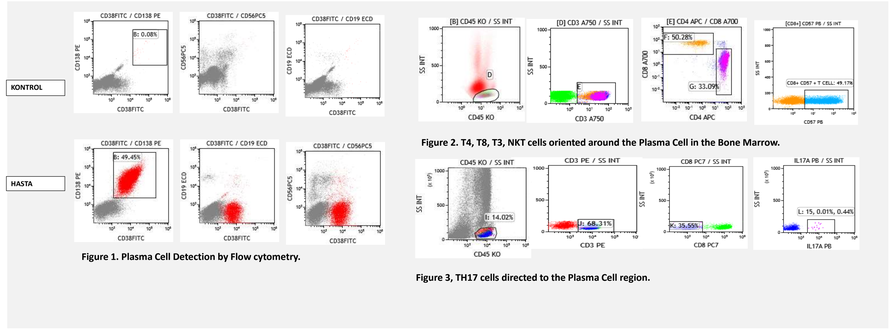


Figure 1. Plasma Cell Detection by Flow cytometry.

Figure 2. T4, T8, T3, NKT cells oriented around the Plasma Cell in the Bone Marrow.

Figure 3, TH17 cells directed to the Plasma Cell region.

HASTA ADI	CD38+CD138+	CD45LY
H1	0%	34.6
H2	0%	31.8
H3	0%	28.6
H4	0%	50.16
H5	0%	28.04
H6	0%	12.99
H7	1%	16.1
H8	9%	41.7
H9	10%	13.6
H10	11%	15.07
H11	20%	22.7
H12	21%	6.1
H13	22%	19.5
H14	23%	5.9
H15	25%	11.4
H16	34%	16.9
H17	34%	48.6
H18	38%	46.3
H19	47%	17.3
H20	50%	18.6

CONCLUSIONS

The distribution of T lymphocyte subgroups in the bone marrow microenvironment of MM patients demonstrates their potential role in tumor progression and immune response. Further investigation and understanding of these interactions can contribute to the development of targeted immunotherapies for MM.

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