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Distribution of several activating and inhibitory receptors on CD3⁺CD56⁺ NK cells in regional lymph nodes of melanoma patients

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ABSTRACT

Background: Natural killer (NK) cells, as the main effector subpopulation of the innate immune system, play an important role in the control of the rise and spread of malignant tumors. Regional lymph nodes (LN) represent the first immunologic barrier to tumor metastasis. Since there are scarce data on NK cells from regional LN of cancer patients, the aim of this study was to investigate the expression of several activating and inhibitory receptors on the entire NK cell population as well as their CD3⁺CD56^{dim} and CD3⁺CD56^{bright} functional NK subsets from regional LN of melanoma patients.

Materials and methods: Mononuclear cells were isolated from 50 regional LN of melanoma patients. The expression of several receptors on NK cells and their functional subsets was analyzed by flow cytometry.

Results: We show increased percentages of CD3⁺CD56⁺ NK cells in involved LN compared with uninvolved LN, mostly in favor of the CD56^{dim} NK cell subset. NK cells in involved LN express similar levels of activating receptor NKG2D, while the level of another activating receptor, CD16, is increased compared with uninvolved LN. Regarding the expression of inhibitory NK cell receptors, we show increased CD158b, but similar low CD158a, inhibitory killer Ig-like cell receptor expression in involved LN compared with uninvolved LN. Furthermore, NK cells in involved compared with uninvolved LN displayed increased CD69 early activation antigen expression.

Conclusions: Our results indicate that with tumor infiltration into regional LN of melanoma patients, NK cells, mostly of the CD56^{dim} subset, are recruited into draining LN. The invading NK cells show counterbalance of the increased expression of CD16 activating receptor and increased CD158b inhibitory killer Ig-like cell receptor.

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1. Introduction

Most malignant tumors spread early thorough the lymphatic vessels to lymph nodes (LN) in the regional lymph node basin.

Nodal metastases can be the source of further tumor spread to visceral organs, where the development of secondary tumors can affect vital functions. Cutaneous melanoma is an aggressive malignant neoplasm of melanocytes, often

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