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M1-M2 macrophages and their bone marrow-derived progenitors in breast tumor microenvironment

L A Tashireva, O E Savelieva, E V Denisov, T S Gerashchenko and **V M Perelmuter**
Russian Academy of Sciences, Russia

Tumor-infiltrating lymphocytes (TILs) have been shown to provide prognostic and potentially predictive value in early triple-negative and Her2-overexpressing, but not in luminal A and B breast cancer (International TILs Working Group 2014). In the ME, macrophages are differentiated both from monocytes and tumor-recruited bone marrow cells. M1 macrophages harbor antitumoral activity, whereas M2 macrophages support tumor progression. The aim of the study was to investigate the presence of subpopulations of macrophages and bone marrow progenitor cells in the ME of luminal A and B invasive breast carcinoma of no special type (IC NST). The study included 16 patients with luminal A and B IC NST, T1-4N0-3M0, 29 to 70 years old. Tumor cell suspension was stained anti-CD34-PerCP/Cy5.5, anti-CD11b-PE, anti-CD45-PE-Cy7 (Abcam, USA) and analyzed by flow cytometer FACS Canto II (BD, USA). The ME (n=3) was isolated by laser microdissection (PALM, CarlZeiss, Germany). Total RNA was isolated by RNeasy Micro Kit (Qiagen, USA), and transcriptome amplification was performed using QuantiTect WTA Kit (Qiagen, USA). Macrophage-related (M1 and M2) gene expression was analyzed by RT-PCR (CXCL11, CD206, CHID1, CHI3L2, TGFB1, IL10, IL12). Gene expression values were normalized gene ACTB and normal tissue. The number of bone marrow progenitor cells (CD34+CD45+CD11b+) amounted to 0.99% (0.72-2.03) in breast tumors. The ME was represented either M1 or M2 macrophages or simultaneously two subpopulations in combination with the expression of key cytokines that provide their functional activity.

Biography

L A Tashireva has completed her PhD from Siberian State Medical University, Russia. She is the Research Fellow of Pathological Anatomy Department of Tomsk National Research Medical Center. She has published more than 25 papers in reputed journals.

lkleptsova@mail.ru

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