Promotion of neurogenesis by human stem cells in high-risk breast cancer survivals after stem-cell supported high-dose therapy

We read the study by Scherwath et al. [1] in which they evaluated the impact of high-dose versus standard-dose chemotherapy on the late neuropsychological outcome in high-risk breast cancer patients. Their analysis showed that after 5 years of treatment, standard-dose patients had more impaired cognitive performance than high-dose patients (13% versus 8%). Stem cells from bone marrow and other sources have been shown to repair injured tissues by differentiating into tissue-specific phenotypes [2]. Neurogenesis by neuronal stem cells and survival of newly differentiated cells can contribute to self-repair after neuronal loss [3]. Moreover, a recent study showed that human stem/progenitor cells from bone marrow promote neurogenesis of endogenous neural stem cells in the hippocampus of mice [4]. Taken together, since high-dose patients were supported by autologous bone marrow stem cells, they might have enhanced neurogenesis in their brain induced by increased neurogenic stem cells through the differentiation of bone marrow stem cells in a response to chemotherapy-induced neuronal loss. This proposal might explain, in part, better neuropsychological outcome in high-dose patients compared with normal-dose patients.

K. Altundag¹, C. D. Moussallem² & M. Z. Baptista³

¹Department of Medical Oncology, Hacettepe University Institute of Oncology Ankara, Turkey; ²Department of Internal Medicine, Beirut Governmental University Hospital, Beirut, Lebanon; ³Department of Clinical Oncology, Hospital Maternidade De Campinas, Campinas, SP, Brazil

(E-mail: drkadri@usa.net)

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