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Different timing and magnitude of acute inflammation induce immunomodulatory effects on myeloid cells associated with anti-tumor responses in a tumor bearing mouse model

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Microbial products, which bind to toll like receptors (TLRLs) on immune are optimal candidates known to activate immune cells. We aimed to compare timing and magnitude of acute inflammation induced by toll-like receptor ligands (TLRLs) on the tumor growth of Ehrlich ascites carcinoma cells (EAC) and the associated inflammatory immune responses. CD1 mice were inoculated with intraperitoneal (i.p.) injection of EAC (5×10^5 cells/mouse), and then treated with i.p. injection on day 1, day 7 or days 1+7 with: 1) poly (I:C) (TLR3L) with different doses 200, 1000, 50 μ g; 2) BCG (coding for TLR9L) with different doses 1000, 500, 100 μ g. It was found that when poly (I:C) was administrated on both days 1+7 or on day 1 induced 63.01% and 61.24% decreases in the numbers of EAC. However, it induced 33.7% when administrated on day 7 only. When BCG was administrated on days 1+7 or on day 1, it induced 84.02% and 68.63%, respectively. It did not, however, induce any effect on EAC when administrated only on day 7. Poly (I:C) at 200 μ g dose induced only 69.14% anti-tumor effect as compared with its effect at 100 μ g (89.93%). In contrast, BCG at 1000, 500, and 100 μ g induced 89.89%, 76.86% and 81.9% decreases, respectively. Among the tested TLRLs, both poly (I:C) and BCG showed the highest anti-tumor effects. These effects were associated with a 2-fold increase in the numbers of inflammatory cells expressing the myeloid markers CD11b⁺Ly6G⁺ (immature neutrophils) CD11b⁺Ly6G⁻ (macrophage in case of spleen and monocytes in case of peripheral blood) CD11b⁺Ly6G⁻ (mature neutrophils). Our results indicate that provision of certain inflammatory stimuli early or late during tumor progression can effectively induce tumor regression.

Biography

Sohaila Mohamed Galal is working as an Assistant Lecturer of Zoology, Department of Zoology, Faculty of Science, Tanta University, Egypt. She is also a Researcher in Center of Excellence of Cancer Research in Tanta University. She graduated from the Department of Zoology, Faculty of Science, Tanta University, Egypt in June, 2010. She got her MSc degree in August 2014. She has published two papers and one abstract.

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