Macrophages reprogrammed in vitro towards M1 phenotype extend lifetime of mice with Ehrlich ascites carcinoma

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Most tumors activate protumoral M2 macrophages thereby promoting immune response dysfunction in carcinogenesis.

Objective: assess the effect of in vitro reprogrammed M1 macrophages on carcinogenesis and lifetime in mice with Ehrlich ascites carcinoma (EAC).

Materials and Methods: Experiments were performed on C57BL/6J mice injected with EAC cells and murine peritoneal macrophages (PM) reprogrammed in vitro towards M1 phenotype (0% FBS, 20 ng/ml IFN-γ). Five groups of mice were formed (n = 16 per group): 1. “EAC” (control); 2. “EAC+PBS” – injection of 0.5 ml PBS (3, 7, 11 days) to EAC mice; 3.”EAC+M1” – injection of 4000 in vitro reprogrammed M1 PM in 0.5 ml PBS (3, 7, 11 days); 4. “EAC+M0” – injection of 4000 native M0 PM in 0.5 ml PBS (3, 7, 11 days); 5. “EAC+cisplatin” (comparison group) - injection of cisplatin (0.05 ml, 0.5 mg/ml) on 3, 7, 11 days.

Results: The maximum lifetime extension in mice was observed in “EAC+M1” vs control and comparison groups, respectively: 22.8±0.8 days (68% increase) vs 13.6±0.2 days and 18.2±0.3 days, p <0.01. PBS and M0 injection did not cause any significant changes. The least significant toxic EAC effect measured by increasing ascites and animal weight on 11 day of the experiment was also observed in “EAC+M1” mice vs control and comparison groups, respectively - 6.5±1.1% vs 12.7±1.8% and 9.1±1.3% (p <0.01).

Conclusion: Injection of in vitro reprogrammed M1 macrophages significantly increased the resistance of mice to EAC progression inclusive of lifetime and ascites fluid accumulation.

Biography

Svetlana Lyamina has completed her Cand. of Med. Sci. (equal to PhD) at the age of 25 years from Saratov State Medical University, Saratov, Russia, and Doct. of Med. Sci. at the age of 31 from Moscow State University of Medicine and Dentistry, performing postdoctoral studies from Moscow State University of Medicine and Dentistry. She is the professor of pathophysiology department of Moscow State University of Medicine and Dentistry. She has published more than 48 papers in reputed journals and she is the author of 2 invention patents.

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